The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees

VOL. XLV. CHICAGO, ILLINOIS, AUGUST 19, 1905. No. 8.

Addresses

STATUS OF MEDICAL AFFAIRS IN THE PHILIPPINE ISLANDS.*

JOHN R. McDILL, M.D.

MANILA, P. I.

The account of the first public and scientific meeting of the Philippine Islands Medical Association was read no doubt with considerable interest and some curiosity by many of the 40,000 readers of THE JOURNAL of the American Medical Association, with which Association we are affiliated. We introduce ourselves to them and to this community by rendering an account of our environment, who we are, of what has been done in medical channels, and also something of what we hope to accomplish.

History tells why we came to the Philippines, but the good friends at home who have never been here, do not understand why some of us remain.

The American medical men who first came to this archipelago and who laid the foundation of modern research medicine, wore the uniform of the United States army and volunteer surgeon. It is doubtful if one of us thought that here he might make a new home and find new fields of labor. For two years our life was that of the soldier, and medical affairs were the many and arduous duties of the army surgeon in field and garrison. At the end of active military service, those of us who knew anything at all of the art of living to begin with, learned to adapt ourselves to the new physical conditions and the exotic climate and were more than ever constantly impressed with the beauty and resources of the country. We have come to esteem to the utmost the climate which so effectually guards many of you against the too strenuous life and which is almost ideal eight months in the year, even in Manila. Our professional experience has proven that, excepting some intestinal disorders which we are rapidly preventing and curing and a limited amount of epidemic infectious diseases, there is nothing unusual about the kind or amount of disease encountered here, or its successful treatment when hospital care is available. The surgeons' work has fully demonstrated that ideal wound healing and convalescence after operation is as much the rule here as anywhere in the world. We physicians also know and appreciate that the dread diseases of childhood so prevalent at home are rare here and that of all the ills, particularly among women, from real bodily ailments to a poor complexion, for which the climate is invariably blamed, the great majority are hereditary or acquired, were brought here by the patient and often aggravated by careless and unhygienic living. For old people and children the climate is an earthly Elysium.

The complement to the climate is the beauty and charm of the mountainous nature of the islands which invite excursions where, among thrilling scenery and invigorating cold, one finds a hunter's paradise in woods full of deer and wild boar and in marshes teeming with feathered game, which have scarcely ever heard a gun. Those who need or prefer to take vacations abroad can have pleasant voyages among our southern islands or to the nearby and interesting countries of China and Japan, Java and the Straits Settlements, or further to India.

The greatest general interest at present is in the result of the Benguet experiment to alleviate the life of foreign residents. One hundred and thirty miles from Manila is a government reservation in the Benguet Hills, 6,000 feet above sea level, where there is an actual temperate climate and where amid inspiring views one inhales cool, invigorating and exhilarating mountain air, flavored with the breath of Norway pines, where trips on foot or horse can be enjoyed for miles on the plateaus and hills, where in the evening fires are necessary in the houses and three or four blankets essential for a comfortable night. This region is now open to the public by the completion of a colossal piece of road building and can be reached from Manila, when rails are laid, in a few hours. The successful completion of this much discussed and much abused road for the opening up of a summer residence in these hills will have more to do than anything else with solving the problem of how we and our families can exist, perhaps permanently in this tropical climate, outside of our proper racial zone and the peculiar environments, thought to be essential to our well-being and to our proper term of life.

With the improved and constantly improving conditions of living, we believe that almost all will agree that by observing the normal and moral life, healthy Americans can live about as long here and enjoy as good health and do as much good and hard work more than three-fourths of the year as we could in the homeland. And that is enough for anyone. Yet our friends at home persistently pity and commiserate us and wonder what keeps us here, but from now on, at least when we strike our balance between what we had in our former prospects and what we now have and expect in the glowing future, it is surely, remembering the fewness of our working years, a perfectly natural spirit that detains us here to work on in the hope of tilling to the utmost the unscratched fields of this virgin country that beckons the followers of almost every occupation and every profession. In our world of embarrassments we have always the restful feeling that we can rely absolutely on the friendship, power and activity of our home government.

* President's address, delivered at the second annual session of the Philippine Islands Medical Association, Manila, P. I., March 1, 1905.

SOME INSULAR MEDICAL INSTITUTIONS.

Pride in the achievements of the Insular Board of Health, especially in its last three years' work under inconceivable difficulties, is shared by the medical profession and public alike. So valuable are the healthful conditions its intelligent and scientific labors have helped to create, that other government and commercial measures, no matter how vital or how earnestly attempted, could not have been so fully and successfully carried out. Manila is now a healthful and safe city and when in the near future the extensive public improvements now under way are completed, it will be not only the healthiest and handsomest, but the most prosperous city in the Orient.

Following the establishment of the Board of Health came the Government Laboratories and its scientific libraries, much criticised because of their supposed cost when other institutions were regarded by the public as entitled to precedence. From a scientific standpoint, however, they place the islands second only to Europe, America and Japan, and their economic value has already been inestimable through their work in combating disease in man and animals, in demonstrating the resources of the country and in saving crops from the ravages of pests.

These laboratory facilities, it should be remembered, are freely open to research workers from any part of the world; original investigations of far-reaching importance have already been given to mankind and original research work is constantly going on.

With the coming from the public schools of native candidates for general science and medical courses, these laboratories, with slight alterations, will provide at once the facilities for and teachers of the fundamental branches, or first two years of such courses which are now taught entirely by laboratory methods.

HOSPITALS.

An infectious disease hospital of permanent construction for 100 beds was opened in January, 1904. Temporary arrangements for the care of (75 male and 15 female) insane have just been completed. A venereal detention hospital has been in operation under government care for four years and there is a special hospital for civil employés. The Women's Hospital, founded by Mrs. Whitelaw Reid, after an existence of nearly two years, succumbed in 1902 to opposition, hard times and mismanagement. A leper colony has recently been established on one of the smaller islands, but a general hospital in which the medical profession and the laboratory scientists, with their unlimited facilities, could properly treat and investigate disease among the natives has not yet been established even on a temporary basis.

This country is overrun with untreated chronic diseases and would furnish enormous material for investigation. Full three precious years have been wasted in which work of greatest importance could have been accomplished. Board of Health statistics show that the mortality of infants in the first year is 60 per cent., and that even in Manila 52 per cent. of all deaths occur without medical attendance. Think of what could have been done by the study of 100 cases of infantile disease and 100 cases of dysentery and beriberi with any sort of hospital accommodations by our trained clinicians and investigators long here and yearning for the opportunity.

When a government general hospital does come, may the grave question of management be rightly decided, and may the management remember that in the treatment of disease the evils of ignorance and faith cure cults can be best combated only when medical science is put into close relationship with the highest moral and religious influences.

MEDICAL ORGANIZATIONS IN THE PHILIPPINES.

The history of medical organization since American occupation is brief. During the military times an army medical corps lyceum was established by Colonel Greenleaf and flourished for a few months. In 1901 a general medical organization for the islands was under way, but was discouraged by a request from the Civil Commission that for political reasons the project be abandoned, and it accordingly was.

July 4, 1902, a call to form the Manila Medical Society was signed by ten American and English physicians; organization was effected at once on the basis laid down for local societies by the American Medical Association. The purposes of the society, as stated in the preamble, are "to promote the science and art of medicine, the cultivation of fellowship, exchange of experience, the maintenance of ethical standards, and the promotion in general of the interests of the profession and the welfare of the public."

Monthly meetings are held and the character of the papers, many original, and the attendance and interest shown in the discussions give it a scientific importance that compares favorably with some of the best medical societies at home. It has been a great encouragement and benefit to its members.

At the annual session of the American Medical Association in New Orleans in 1903, a body of over 15,000 physicians, representing several hundred subsidiary societies, the affiliation of the Manila Medical Society was authorized on the basis of a state organization. This was effected in September, 1903, by organizing this association, the Manila Medical Society becoming its first component society, which preserves the integrity of future local or provincial societies. Thus the Manila and any future societies become, through this Philippine Islands Medical Association, the only avenue in this part of the world to membership in the great home body.

The councils of the local and provincial societies, like the houses of delegates of the state and national organizations, are representative bodies of picked men, which deliberate on and carefully dispose of many of the practical medico-social, medicolegal, medico-political and medico-material problems constantly puzzling us as a well-developed unit in the social order of the age. (Simmons.)

THE FILIPINO MEDICAL MAN AND HIS SCHOOLS.

Of greatest interest to us when we found time to make their acquaintance were our Filipino colleagues. We found them courteous and charming in manner, alert and devoted to the interests of their patients, apparently enthusiastic in medical affairs, good students of French and Spanish literature, and liberal purchasers of new instruments and remedies. They have two striking characteristics, an astonishing capacity to absorb and expound theory, and they have occupied an unique social position in that the abler members of the profession have always been foremost among the political leaders of their country.

An interesting feature of medical practice here was the custom, still somewhat in vogue, of charging enormous fees for even ordinary services, sometimes running up into the tens of thousands, and the fact that these

V 45
1905

delightful fees were often collected was probably due somewhat to the political importance of the profession. Their general education was in the schools of the religious orders, their professional training in the medical department of the University of Santo Tomás and in some instances supplemented by a course of study in Spain or France. Attracted by the personality of the better class of native doctors, earnest overtures have been made to fraternize and interest them in medical society work and making all due allowances for difference in language, customs and education, we are not able to satisfactorily explain the reason of our almost total failure to affiliate them. We are glad to say that a year ago a native and Spanish medico-pharmaceutical society was established and the American Principles of Medical Ethics adopted. We are about resigned to the belief that no close community of professional interests will be possible until the arrival of a new generation of native doctors educated in English and in the modern university schools, where they are actually educated instead of having some information imparted to them.

The existing Spanish institutions that interest us are three, the University of Santo Tomás, its Medical College of San José and the Hospital of San Juan de Dios.

The college of Santo Tomás was founded for the Filipino people in 1612 by the Dominican, Miguel de Benavides, the third archbishop of Manila. It was raised to the status of a university in 1645. From 1785 it has been styled the Royal and Pontifical University of Manila and is the only university authorized to issue diplomas in theology, law, medicine and pharmacy.

Graduates of the several church colleges, whose average age is about sixteen years, are admitted without examination. It has had 118,741 students, less than 3 per cent. of whom, or 3,434, have graduated. It has at at the present time 982 students in all departments.

By royal decree of 1876, reorganizing this university, the departments of medicine and pharmacy were created, with a provision that they be installed in the famous college of San José, which was lost to the Jesuit fathers by their expulsion in 1768. Medical instruction had begun, however, in 1871.

The affiliation of the Medical School of San José with the University of Santo Tomás, which issues the degrees, seems rather nominal as the school is quite autonomous, resembling in this respect the relation of many of our home proprietary medical schools to some universities.

The published list of the medical faculty shows 81 names, and of these about 20 are the active professors and teachers. To date, after 35 years of existence, diplomas have been granted to 10 doctors and to 247 licentiates of medicine. The difference between doctors and licentiates is an extra college year and 100 pésos ($50) more fees. The average age of graduates is 26 years. There is another class, called cirujanos ministrantes, who, after two years' instruction in college and hospital, are licensed to practice medicine only and where no doctor or licentiate is available.

The medical course lasts seven years; the fees for the entire course was 242 pésos ($121). The licentiate pays about 200 pésos for his title, and the doctorate degree costs 350 pésos and one more year's study. The present class numbers 135. The graduating class for 1905 consists of but 5 members.

The teaching, which is didactic and clinical and not graded, is mostly given in the Hospital of San Juan de Dios, founded in 1596 and conducted by the Sisters of St. Vincent of Paul. The hospital has now 27 Sisters, about 200 patients, 8 attending physicians, and 14 of the professors of the Medical College of San José give clinical instruction to medical students.

STATUS OF MEDICAL CONDITIONS AND NEED OF MEDICAL SCHOOLS.

To supply the medical and sanitary needs of this country, 2,000 or 3,000 native physicians and sanitarians should be educated here during the next 20 years.

The population of the islands is about 7,500,000 people, 6,000,000 of whom are said to be Christians. The statistics of the Manila Medical Society show that the total number of licensed physicians is only 360, and 217 of these are in the city of Manila. These figures mean that, although in Manila there is one physician to 1,013 inhabitants, in the provinces the proportion is but one to 51,786, or one physician to each 430 square miles.

In the policy of the government for the general improvement of the Filipinos, perhaps the greatest results are looked for from the Department of Education. With the coming of advanced students in June of next year and the necessity of professional schools for them, it is essential that these schools be established along the lines of the best modern thought, the university plan.

The present status of medical science as defined by Dr. Billings requires and demands a university medical college course. By a university medical college is meant a medical school which is directly connected with and a part of a university, the university fixing the requirements and controlling the admission of students to the medical department. For this ideal and practical scheme of medical education, all the fundamental sciences must be taught entirely by the laboratory method of individual instruction and by teachers who give their whole time to research work in connection with the instruction of students. This plan could be carried out now in the government laboratories, which have the men and facilities to instruct in anatomy, physiology, chemistry, pathology, bacteriology, etc.

The second two years of senior college work should be supplied with facilities of equal rank in clinical medicine, surgery and obstetrics by the endowment of research hospitals in which the instructors devote their entire time and energy to teaching and investigating disease. The cost of these hospitals, if ideally built, equipped and endowed in perpetuity, is stupendous, and in the United States two millions is thought to be about right for each of these hospitals.

No teaching hospitals, however costly, would serve their purpose without an abundance of cases to choose from, but the clinical material available here is practically unlimited. The government has set aside a centrally located site of 23 acres in the city of Manila, ostensibly for hospital purposes, and these two things alone should attract the attention of some man of large means looking for the right opportunity to benefit mankind and assist the Filipino people at the same time.

Untrammeled by traditions of a past or by proprietary medical schools and urged on by the necessity of supplying the country with sanitarians and physicians as fast as possible, a demand that can not be supplied in many years, there is here an unique opportunity for the establishment of the ideal university and affiliated professional schools. There will be no lack of candidates; the Filipinos are bright, earnest, capable students and especially inclined to the study of the learned professions.

This association is, of course, particularly interested

in the medical department of a Philippine university, and we find our encouragement in the peculiar preference of the native for our profession; in his alert and inventive mind, coupled with a natural dignity of manner and a certain manual dexterity and accuracy and in the fact that the 140 students in the United States are showing marked aptitude and progress in their studies.

In conformity with the highest purposes of all medical organization, which are the extension of medical knowledge, the advancement of medical science, the elevation of the standard of medical education and the enactment and enforcement of just medical laws, this association, through its permanent Committee on Public Policy and Legislation, petitioned the governor-general in January of this year to appoint, without delay, a board of regents, provisional or otherwise, to report on a plan for the formation of professional schools as part of a university system. This action was taken after consultation with the superintendent of public education, who had already recommended steps looking to the establishment of a university, and who stated to us that by June, 1906, there will be between four and five hundred students who can take some of the branches of a preparatory university course.

It is also confidently believed by the normal school teachers that their schools will be on the plane of the American high school in another two years.

Our greatest hope for the future lies in the education of the people in sanitary matters and the enforcement of laws, and this can only be accomplished by a small army of native sanitarians. Preventive medicine has profited far more than curative medicine by the discoveries of recent years, hence a Philippine medical school should devote its first years to supplying this most pressing need by turning out as many sanitarians as possible. While always standing for the highest practicable requirements, in view of our distressing lack of this class of men, the requirements for admission and graduation should be minimized at the start; to balance this compromise, the first classes graduated can take postgraduate work later in their careers.

Billings estimates the cost of a complete modern medical education to be between $6,000 and $8,000. Keen has shown that the teaching force has increased 110 per cent., against an increase of fees paid by students of less than 100 per cent. It is clear that state aid or private endowment must be had.

Quoting from Dr. Dodson's address, we hear again that at present private beneficence holds out much the larger promise, and in the hope of such assistance there is every reason to feel the greatest encouragement. The recent gifts to medical institutions and for the promotion of research on a princely scale are conclusive evidence that men of affairs and of large capital, whose chief desire is to find a use for their money which shall be of the greatest service to mankind, have come to realize that in these medical channels, especially, large gifts are more likely to yield a certain speedy and bountiful return in good to the world. Since 1900 nearly 300 millions represent the amount of gifts and bequests for all purposes in the United States alone.

One year ago to-day Dr. W. W. Keen[1] made a ringing plea for increased endowments for medical instruction which will soon vitally concern us in what he supposes some would call "far-off, barbarous Manila." The main reason he advanced for generous endowments from the public is the sordid commercial value of the profession to the public. Dr. Keen was not talking of the value of health to anybody or of the desire for the health of those dear to us at home, nor of the kind father that may be lost to a young and dependent family, of the loving mother or of the dear child whose place can never be filled in our hearts or homes, but merely of the profession's value to the community in hard cash, dollars and cents.

The horrors of quarantine of a few years ago, he points out, have been almost abolished by reason of the research work of the medical profession. We no longer fear cholera, the plague, yellow fever or even typhoid fever, because we have killed the rat, we can quarantine or destroy the mosquito, we have barred out the fly and we are boiling and filtering our drinking water. All these things have been shown to be needful and efficient for the prevention of disease by the most patient scientific laboratory work.

A few years ago a single case of cholera or yellow fever in any great port would have meant the loss of millions of dollars to the merchants, but to-day these cases, even of plague, scarcely create a ripple of excitement, because the community knows that our able medical men have these diseases by the throat. Look at the epoch-making work of Dr. Walter Reed and his fellow-workers in Cuba. For the first time in 170 years Cuba has been made free and kept free from yellow fever, and the merchants from New Orleans to New York are reaping the benefit of this unselfish labor in hard dollars on the credit side of their accounts.

The horrible character of plague we scarcely appreciate. In the fourteenth century, twenty-five millions of human beings lost their lives in Europe alone, and even to-day in India, among the ignorant people, over two hundred thousand lives are lost every year from plague. Haffkine's inoculations have diminished the susceptibility of the people by 75 per cent., and the mortality in equal proportions, and the time is coming when the plague, like yellow fever and smallpox, will be practically wiped out.

Again, we must not forget what smallpox was in the past. In the eighteenth century sixty millions died from smallpox in Europe alone, and almost all the living were left with the marks of the disease on their persons. It was as uncommon in the streets of London to see a person not pockmarked, before that memorable day when Jenner inoculated young Phipps in 1796, as it is to-day to see one in New York who is pockmarked. Consider what these millions of saved lives mean in revenue to the state, to the family, in the prevention of pauperism, and the comfort of human beings; then, we must appreciate the value of the services of one man, the most magnificent benefactor of the human race that ever lived, Edward Jenner.

In 1890, Keen estimates that there were 157,000 unnecessary deaths in our large cities. The sanitary reform in 1895 saved in three years a total of 21,300 cases. As there is an average of twenty-eight cases of sickness for every death, sanitary reform in those three years prevented about 600,000 cases of sickness. And who were the reformers? The physicians. The hundreds of millions to be saved in fifty years in one large city alone would enrich the most avaricious of nations.

You all know what has been done in diphtheria in our day, and it has not been done by constant and

1. Address at the dinner to Dr. D. B. St. John Roosa, March 1, 1904, by Dr. W. W. Keen of Philadelphia. While elaborating a similar arrangement the reprint of this stirring address providentially arrived the day before our meeting and was in part appropriated bodily. It could not be better expressed.

V 45
1905

fruitless trials of various supposed means of cure, but it has been done by exact laboratory work by quiet men working far away from the sick room, with not a single human patient under their care, men who are not practitioners of medicine, but pathologists and bacteriologists, experimenting on rabbits, guinea-pigs and mice instead of on men, women and, especially, dear little children, and thus working unobserved and unheralded and unseen they have given to the human race a boon second almost to that of Jenner. The mortality of diphtheria has fallen from 40 to 8.8 per cent., and in laryngeal cases before the serum treatment the mortality was 73 per cent., recoveries 27 per cent., and now precisely the reverse has become the case.

Great epidemics of typhoid have been traced to one case contaminating the water supply of a city, which is preventable.

Malaria was formerly thought to come from marshes and decomposing vegetable matter; now, thanks to the investigations of medical men, you all know perfectly well that if you shut out the mosquito you shut out malaria, as well as yellow fever. When the United States digs the Panama canal, there will be seen a splendid object lesson in sanitation that will carry conviction to all of the money value of medical research in the saving of millions of dollars and thousands of lives.

We are on the verge of an equally beneficent improvement in the treatment of tuberculosis. In Germany the cure of even 10 per cent. adds two millions annually to the resources of the state, and human lives and human happiness can not be reckoned in dollars and cents.

In military hygiene and sanitation the money return is equally profitable. Witness the fearful losses of the British from preventable disease in South Africa, or, worse still, our own losses in the Spanish-American war, where the mortality from wounds was 1 per cent. and that from preventable disease 70 per cent. This could be now characterized as governmental murder through criminal neglect, since the Japanese have practically eliminated disease as a factor in war.

The Japanese determined that their only hope in the war with Russia was that every man who died should die on the field of battle, and in that way neutralize the superiority of two million Russians under insanitary conditions with half a million Japanese protected from disease by a capable medical corps backed up by their government with every authority and facility to prevent disease.

Translate all these facts into figures and the commercial value of modern surgery and of all the medical work done in diseases of animals, and who can tell us the money value of medical research work?

Dr. Pritchett, in McClure's magazine, well says that "The research habit, once thought so far removed from utilitarian ends, is to-day the greatest financial asset of Germany," and we Americans, whether at home or in her possessions, can acquire that "research habit" and teach it to our charges and make it our best and most valuable financial asset, but this takes money.

On account of the complexity and multitude of questions to be solved, such a board as suggested would hardly have a complete outline of plans in two years, and a further reason for its prompt creation lies in the fact that some such definite action is necessary in order to successfully invite private endowment, which must be secured in view of the enormous expense entailed by modern university school methods, particularly in the medical department; further, the appointment of regents would give the department of education the exact impetus it needs at the present time by opening up to its students the vista of higher education.

There is surely a rich man, or better still a rich woman, somewhere who can be found willing to contribute by his or her means to establish a Philippine University Medical School and perhaps temporarily to assist the present school of San José to increased production until it can be absorbed by the university.

The medical profession is but waiting to assist with all its power an earnest and active board to point out to donors the genuine and lasting pleasure that it gives to share in the great and lasting benefits given to humanity by the research workers in medical fields.

THE TEACHING OF PEDIATRICS.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON DISEASES OF CHILDREN, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

JOHN LOVETT MORSE, A.M., M.D.,

Instructor in Pediatrics, Harvard Medical School; Assistant Physician at the Children's Hospital and at the Infants' Hospital; Visiting Physician at the Floating Hospital.

BOSTON.

Harvard requires for admission to its medical school a degree in arts, literature, philosophy or science from a recognized college or scientific school, except that those who have acquired an equivalent education may be admitted by a special vote of the administrative board in each case. All candidates are required to satisfy the faculty that they have had a sufficient course in theoretical and descriptive (inorganic) chemistry and qualitative analysis or to pass an examination in the same.

The course of study required for the degree of M.D. is of four years' duration. The first three years are devoted to prescribed work and the fourth year entirely to elective courses. A minimum of 1,000 hours' work is required of each fourth-year student. Written examinations are given in the studies of the first three years. In the fourth year the nature of the examination is determined by each department, subject to the approval of the faculty. The whole of the first half of the first year is devoted to anatomy and histology; the whole of the second half to physiology and physiologic and pathologic chemistry. The first half of the second year is given to pathology and bacteriology. The second half of the second year is devoted to elementary medicine and surgery, with lectures on hygiene and pharmacology, and is preliminary to and preparatory for the third year. Two hours a day of this half year are devoted to section work, in which the students are given instruction in physical diagnosis, examination of the blood, urine, gastric contents and so on, in small sections in the hospital clinics.

The third year is devoted largely to medicine and surgery. Pediatrics, neurology, dermatology, obstetrics, gynecology, orthopedics, syphilis, psychiatry, therapeutics, laryngology and otology are also taught more or less in detail. The first two hours of each morning are devoted to clinics and clinical lectures for the whole class, and the second two hours to section teaching. Lectures to the whole class occupy two or three hours of every afternoon.

The present third class consists of about seventy men and is divided into thirty sections of two or three men each. These sections are assigned to work in groups

varying from two to ten. This work consists of bedside instruction in the wards or out-patient departments of the various hospitals. Enough instructors are provided so that, if every student is present, no instructor has more than six students; usually he has but three or four. The students in this way receive almost individual instruction. Each exercise lasts from one and one-half to two hours. The exercises are so arranged that, as a rule, every section is busy somewhere. The following extracts from the tabular views of the two terms show much better than any description the arrangement of the section teaching.

The fourth year, beginning with this autumn, is elective. The subjects are divided into courses. Each course equals 125 hours. The student must take 1,000 hours, or eight courses. This is equivalent to one course a month for eight months. Courses are given all day for one month, or half a day for two months. All day means from 9 to 1 and from 2 to 6 every day. Half a day means from 9 to 1 or from 2 to 6 every day. The student must decide on his courses for the year at the beginning of the year. The students are divided among the different months by a special committee of the faculty. Each department decides what the work is to be in its courses. A man may take more than one course in a given subject if he desires, but can not devote the whole year to one subject without the consent of the head of the department. The courses are not graded.

The courses advised by the committee for men who intend to enter general practice include: Medicine, 3 courses; obstetrics, 1 course; surgery, 1 course; pediatrics, 1 course; neurology, dermatology or gynecology, 1 course; otology, hygiene, bacteriology, histology, physiology, chemistry or neuropathology, 1 course.

The elective fourth year enables the student to take a general course of study or to devote a part or all of his time to the subject or subjects in which he is most interested. The future alone can tell how it will work out. In all probability most of the students will select their courses with a view to entering general practice, while only a few will turn at once to the study of a specialty. The personal popularity of the instructors can not fail, however, to influence the students to a certain extent in their choice of courses. On the whole, I think that men who have studied hard for three years after having been through college can be trusted to choose wisely and to make the best of their opportunities.

The department of pediatrics consists of a professor, an assistant professor of contagious diseases, an instructor, a clinical instructor and two assistants. The department practically controls the medical wards of the Children's and the Infants' hospitals, as the nomination of the visiting physicians to these hospitals is in the hands of Harvard University. The visiting physician nominates his subordinates. These hospitals afford a large amount of clinical material for instruction both in the wards and in the out-patient departments. About 700 medical cases are treated annually in the wards of the Children's Hospital and about 200 cases at the Infants' Hospital, while about 3,000 medical cases, making 6,000 visits, come to the out-patient department of the Children's Hospital and about 2,000 cases, making 7,000 visits, to that of the Infants' Hospital. The surgical sides of these hospitals can also be utilized, if desired. The Infants' Hospital wards are limited to babies under 2 years, and the great majority of the out-patient cases are infants, although children as old as 12 years are treated. Both infants and children are treated in both the wards and out-patient department of the Children's Hospital, but the vast majority, especially of the ward cases, are over 2. The present assistant professor of contagious diseases is resident physician at the contagious department of the Boston City Hospital. About 2,000 cases are treated there annually, mostly of diphtheria and scarlet fever, but some of measles and chickenpox. Smallpox patients are not admitted.

Instruction in pediatrics in the third year is given to the whole class by lectures, clinical lectures, recitations and case teaching, and to sections in the wards. Thirty lectures, 24 clinical lectures, 10 recitations and 10 exercises in case teaching are given. The first lectures are on diphtheria and the exanthemata, preparatory to the section teaching at the hospital for contagious diseases. The theory of infant feeding is then taken up and is followed by 5 practical illustrated lectures on the preparation of modified milk in all its forms. The next lectures are devoted to the diseases of the gastrointestinal tract, and are immediately followed by a series of clinical lectures on these diseases. The topics of the rest of the lectures vary from year to year, but the diseases of nutrition and those of the heart and lungs are almost always taken up. The lectures continue until the first of May. The clinical lectures start at the beginning of the year and continue until April. The recitations begin in February and are designed to cover the more important of the subjects not touched on in the lectures. The case teaching closes the year. In this form of teaching each student is given a typewritten copy of the history and physical examination of an actual case. He is supposed to study this case carefully with his textbooks before the exercise, when it is taken up and discussed in detail. The exercise is conducted chiefly by questions, the object being to make the students think for themselves as far as possible. Particular attention is devoted to the details of treatment.

Each section has seven or eight visits at the hospital for contagious diseases and from 20 to 22 at the Children's and Infants' hospitals. At the hospital for contagious diseases the students have the opportunity to become intimately acquainted with the exanthemata and diphtheria. Intubation is at present taught entirely on the cadaver, but it is hoped that in the new elective fourth year it will be possible to teach it on the living as well. At the other hospitals the students see a considerable number and variety of cases. In this section work the time is devoted to the examination and discussion of the cases by the students themselves under the supervision of the instructors, as little time as possible being given to didactic teaching.

In the new elective fourth year the department of pediatrics offers a course each month. A course occupies the whole of each day during the month and counts for 125 hours. A student may take more than one course in pediatrics, if he desires, but can not devote the whole year to it without the consent of the professor of pediatrics. The courses are not graded. The students electing pediatrics are divided among the months by a special committee. The department of pediatrics decides what the work shall be in each course.

The character of the teaching has not yet been entirely decided and must, of course, depend a good deal on the number of students electing the subject and the number to be taught in each month. The general plan, however, is to have the students assist in the work of the hospitals, both in the out-patient departments and in the wards, and to study special cases or groups of cases under the supervision and with the assistance of the

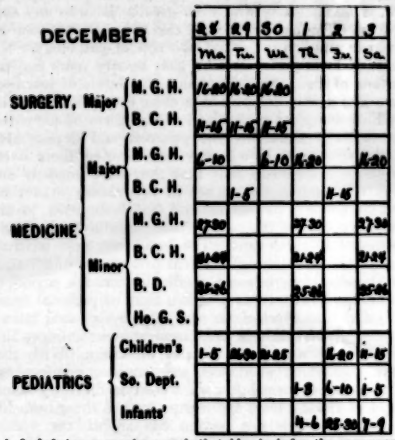
V 4
190

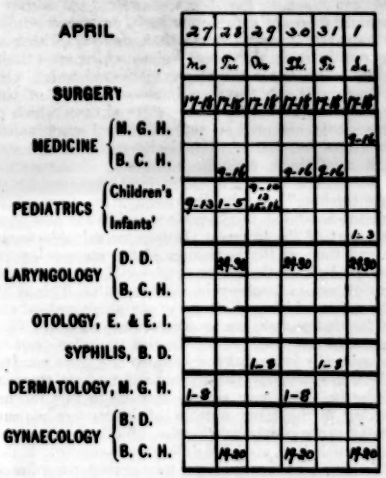
instructors in the department. They will be required to do considerable reading in connection with their cases and, if possible, to undertake more or less original investigation. Those who elect but one course can not, of course, go very far in the subject, but those who elect several courses or who devote the whole year to pediatrics will have the opportunity not only of getting a good comprehensive grasp of it, but also of following up special lines of work and of carrying out original researches.

Special courses for graduates have been given in the past throughout the winter months. In the future graduates will be admitted to the fourth year elective courses and the character of this instruction modified as far as possible to suit their individual needs. Summer courses, open to both graduates and undergraduates, are given in each of the summer months. In August and September they are arranged to occupy the whole of every morning. The opportunities for graduate instruction in pediatrics in Boston have not been generally known or appreciated as they should have been in the past. It is hoped that more advantage will be taken of them in the future.

I have described the teaching of pediatrics at the Harvard Medical School in so much detail for several reasons, one of which is that as I am more familiar with it than with that in other schools I can take advantage of both its merits and defects in discussing the best methods of teaching pediatrics in our schools. Another reason is that, owing to the untiring energy and incessant effort of Dr. T. M. Rotch, the present professor of pediatrics, the department of pediatrics at Harvard has for many years been accorded more nearly the consideration which the importance of the subject deserves than has been granted in other schools. On this account the department has had the opportunity to work out many problems in methods of teaching and by actual experience to arrive at a comparatively high grade of efficiency. The department of pediatrics at Harvard is a department by itself and not a part of or subordinate to any other department. Pediatrics can never be satisfactorily taught unless it is a separate department. If it is made a part of the department of obstetrics or of gynecology, as in some schools, it is certain to be neglected and to be improperly taught. It is too important a subject even to form a part of the department of internal medicine. When it is in that department, as it is in some schools which in other ways are most progressive, it is sure to be insufficiently and imperfectly taught, as it is in them. No man is competent to appreciate how much there is to be known about pediatrics and how little there is known about it, even by the best men in other lines, except the man who makes it a specialty. If the faculties of our medical schools did appreciate these facts there would be an independent department of pediatrics in every medical school. No one who does not make a specialty of pediatrics is, moreover, competent to teach it as it should be taught.

While the time allotted to pediatrics in the third year at Harvard is, of course, entirely inadequate in which to teach the students all that they ought to know about the subject, it is, I think, about all that its relative importance justifies. Pediatrics is recommended, moreover, as one of the fourth year electives for those students who intend to go into general practice and opportunity for further study is also provided in the fourth year. This division of the work between the third and fourth year is, I think, fairly satisfactory when the studies of the fourth year are elective. If the course of study for all four years is prescribed, I feel sure that the greater part of the teaching of pediatrics should be given in the fourth year, when the students have a better knowledge of internal medicine and of physical diagnosis. In the third year, at any rate at the beginning, they are hardly competent to make the most of pediatrics, especially in its clinical aspects. On this account I feel that in schools in which the fourth year is elective the greater part of the clinical teaching of pediatrics in the third year should be given in the second half of the year. The first half of the year could then be devoted to preparatory lectures and to instruction in the anatomy, development, physiology and path-





A dash between numbers on both tables includes the corresponding sections.

ology of infancy and childhood, providing those subjects had not been taken up earlier in the course. In Harvard, at least, the students are taught little or nothing about these subjects at these ages and are consequently not properly prepared to take up the study of pediatrics. I believe that instruction in these subjects should form a part of the regular courses in anatomy, physiology and pathology. If these departments are not prepared to give such instruction, it should then be given under the direction of the department of pediatrics at whatever time these subjects are taught.

It is very difficult to decide as to the relative proportions of the various forms of teaching which will give the best results. Personally, I believe that there is still room for a moderate amount of didactic teaching in the form of lectures and clinical lectures (amphitheater clinics for a whole class). The reading of textbooks can never take the place of lectures, if they are given as they should be given. The right sort of a lecture can paint a picture of disease, bring out the cardinal points and leave an impression on the mind which no textbook can possibly do. Lectures which are merely a monotonous recital of the author's or someone else's textbook are, however, worse than useless. There are also certain cases with gross lesions which are suitable for demonstration in the amphitheater and which, when shown in this way, save an immense amount of time for the study of the far larger class of cases which require closer observation and individual examination. Recitations are, I think, practically useless. The same result is attained, with the additional advantage that the students are made to think for themselves, by the "case teaching" already described. This form of instruction should, I think, replace recitations and possibly a part of the lectures. It is more valuable toward the end than at the beginning of the course. In any case, the bulk of the instruction should be given in the form of section teaching in the hospitals. This is the only way in which pediatrics, or any other medical subject for that matter, can be satisfactorily taught. There can not be too much of it. In this way alone can the student really learn to know diseases and their manifestations and properly prepare himself to treat them intelligently. The most serious obstacle to this form of teaching is the large number of instructors required and the expense entailed thereby. While this is an obstacle which it is at times difficult to overcome, it does not in any way, however, militate against the value of section teaching and consequently must be overcome, whatever the cost.

In conclusion, the teaching of pediatrics, as of other kindred subjects, will never be ideal until the instructors, or at least the heads of departments, devote their entire time and energy to their teaching. They should not be allowed to see private cases except in consultation and then only after they have given a definite amount of time to their teaching and hospital work. Men can not afford to do this, of course, unless they are paid higher salaries than at present. Living salaries can only be paid, however, when the chairs are endowed. We must look to our wealthy and public-spirited citizens to do this.

Remedy for Furuncles.—Dr. A. G. E. Naylor states in the *Australasian Medical Gazette* that he has found compound tincture of benzoin a specific for all kinds of boils. It is applied freely, around and over the boil, within twenty-four hours of its appearance or before suppuration commences.

THE SPECIALTIES IN RELATION TO THE GENERAL PRACTITIONER.

CHAIRMAN'S ADDRESS BEFORE THE SECTION ON LARYNGOLOGY AND OTOLOGY, AT THE FIFTY-SIXTH ANNUAL SESSION OF THE AMERICAN MEDICAL ASSOCIATION, PORTLAND, ORE., JULY 11-14, 1905.

ROBERT CUNNINGHAM MYLES, M.D.,
NEW YORK CITY.

It is my privilege to open the Section on Laryngology and Otology of the American Medical Association,—a highly appreciated privilege which you have conferred on me by electing me your chairman, and for which I desire to thank you. It is not only a privilege, but an honor which I have done little to deserve, but I will endeavor to show my appreciation by presenting a few suggestions in the course of the customary chairman's address, which I trust will be accepted in the spirit in which they are given, not only by this section, but by the profession at large.

There never was a truer saying than that "the more we learn, the more we recognize how little we know." If this truism holds good in the general philosophy of life, it is applicable with even greater force to any subdivision of human knowledge, and not with the least degree of emphasis to general and special pathology.

No one can justly pretend that twenty years ago the leaders of the medical profession, the lights of learning, were lamentably deficient in a clear perception of philosophic principles; no one will accuse them of purposely and wilfully thwarting the progress and development of the science to which they had devoted their lives; no one will seriously deny that they have honestly and faithfully endeavored to act in accordance with their best judgment, conviction and enlightenment, to the best advantage of the noble art whose interests had been entrusted to their care. The same may also be truly said of the guardians of medical prerogative of all ages, but I select for purposes of illustration the period of twenty years ago, because it is a time of personal recollection, a time of which we can judge by personal knowledge of the conditions and circumstances under which medical lore was dispensed and practiced. With that knowledge of circumstances and conditions before our mind's eye, let me ask you what position did the medical world of twenty years ago occupy toward those branches of the art which this section has adopted as worthy objects of special cultivation, teaching, care and practice. It was a position of utter indifference, and it mattered not an iota whether or not the medical student of that day had absolved the short and elective course in our specialties—the only one available—in order to stamp him a full-fledged physician. It is no use arguing that the time for specialism was not so ripe then as it is now, because we know that since time immemorial the medical profession has recognized the desirability and necessity of allotting the treatment of special ailments to specialists; but the ear, the nose, and the upper air tract were treated like step-children, and it is only in the enlightened days of a more recent past that we condescended to raise them to the dignity of legitimate members of the pathologic family. There would be neither explanation nor excuse for the attitude of former cycles but for the truism which I cited as the introductory remark of my address, that the more we learn, the more we recognize how little we know.

As our knowledge of nose, ear and throat affections increased, as we found that local pathologic conditions were frequently responsible for constitutional ailments,

V 45
1905

and that the latter in turn might produce local manifestations, we delved more deeply into special research work. The advent of the laryngoscope, rhinoscope and otoscope enabled us to carry research work and special treatment to hitherto undreamed of perfection; we learned, learned more, and recognised how little we knew; and that was the signal for the evolution of the specialist in laryngology, rhinology and otology.

Has the course of events justified his creation?

Although we, as members of this section, unhesitatingly and decidedly answer this question in the affirmative, there are reflex considerations which we, as members of the medical profession, would do well to heed.

It is unquestionably true that when a man concentrates his best powers, energy and knowledge, all that is in him, on the study and practice of one particular subject, his work will in all probability excel in this particular the work of another man who studies and practices a dozen different subjects simultaneously. It should never be forgotten, however, that constitutional disturbances may produce local manifestations, and that, however expert an otologist, for instance, may be in the pathology of the ear, he would be a poor physician if he resorted to a local operation for the removal of a symptom which the more broadly trained general practitioner would trace to constitutional causes. In other words, general and special pathology must go hand in hand, a fact which, it seems to me, has not been sufficiently recognized or acted on.

As medical specialism in the course of recent years gradually assumed the well-defined shape in which we see it to-day, the general and special practitioner have drifted more and more apart. Ever since the specialist devoted himself to the exclusive cultivation of one particular field, in which he established himself as the supreme authority, the general practitioner—whether he liked it or not—took a back seat in the treatment of special diseases.

This is a perfectly intelligible and reasonable standpoint, so far as large cities are concerned, and also among those physicians who are so situated that they will spend the rest of their lives in a large city, because in large cities neither patients nor physicians will suffer from the arrangement, there being a sufficient number of general patients to keep the general practitioner alive, and a sufficient number of specialists to care for those cases that require special treatment. The question, however, assumes a totally different aspect in small towns or in country districts remote from large centers, where there are no specialists, and where the general practitioner is expected to evince his prowess in every case—from prescribing a powder for a child to performing Cesarean section; and considering that, after all, there are more small towns than big cities, the importance is apparent of including in the training and education of the medical student a fair sprinkling of specialties.

In the present advanced state of general and special medical knowledge it is of course absolutely out of the question to acquire a thorough knowledge of everything, as this would absorb the best part of a lifetime. All that is essential in the various specialties should unquestionably be included in the up-to-date training of students, and it is one of the tasks of the teachers of special subjects to select just that amount of necessary detail which can be usefully imparted to the students without appreciably adding to the burden of their mental exertions. Students should be made familiar with that borderland where general and special pathology stand on common ground, for after all the same principles of medicine and surgery underlie both. While, for example, they should not be encouraged to perform operations for the removal of adenoids with forceps on account of the delicate technic of manipulation, they can be instructed in the safe handling of the Gottstein curette, in tamponing the naso-pharynx, in using the rhinoscopic, laryngoscopic and head mirrors, the tongue depressor, the nasal speculum, in inspecting the interior of the nose and larynx, and, above all, in differentiating healthy from pathologic conditions. They should be trained to know when it is necessary to remove parts of the turbinates and when not.

The student of general pathology should be shown—not merely told—how hemorrhage after rhinologic operations can be quickly arrested by application of firm pressure, and his attention should be called to the importance of using such pressure without loss of time before considerable hemorrhage has had an opportunity to occur. The method of applying such pressure, or of inserting a posterior tampon skillfully and dexterously, should be practiced on the cadaver and not relegated to didactic lectures. Ocular demonstration in the autopsy room or in the laboratory in the special course of instruction in nose, ear and throat affections, is in many cases far superior to mere oral teaching, although didactic lectures, of course, should also form part of the special training.

One of the great advantages to be derived from the inclusion of details such as these in the general curriculum would be that the general practitioner, when confronted with ear, nose and throat troubles, will be able correctly to diagnose the case and to determine whether it is within his sphere of knowledge and ability to treat the patient himself or whether it is necessary to refer the case to a specialist.

Far be it from me to advocate the creation of what has facetiously been termed a "general specialist," nor is it my desire to see a medical student overcrowded with subjects for which he has no practical use, but necessity demands something akin to a general specialist in the country districts. This would be a mistake which Professor Huxley already characterized as a grave offense at a period when the medical curriculum was not so diversified as it is at the present day. However, I do think that we are permitted to reckon with the "unearned increment" in the learning capacity of each successive generation, which means that the student of today is able to assimilate more knowledge than did his forefathers, partly from the increasing superiority of fundamental knowledge, partly from the improved and more systematic methods of communicating scientific subjects; and, while I strongly advocate the cause of the specialist in laryngology, rhinology and otology, with equal earnestness, I demand that the general practitioner familiarize himself with such necessary and uncomplicated details of our specialties as I have enumerated.

There is another branch of the profession in which a more intimate acquaintance with the latter would be a useful and highly commendable achievement. I refer to the military surgeon and the general army and navy physicians, on whom the well-being of the rank and file of the army and navy depends.

It may be necessary, when respiration is impeded, to perform laryngotomy, an operation which, under modern enlightenment, every surgeon, and especially every

military surgeon, should be able satisfactorily to perform. Even the division of the cricoid cartilage may be safely combined with the operation in order to enlarge the opening, when necessary. The surgeon should be familiar with all new devices which have stood the test of practice. Thus, instead of blindly groping for the bullet or other foreign invader of the trachea, if properly trained, he would illuminate the trachea on modern principles, and thus contribute to the accuracy, speed and safety of the operation. His special training should include a knowledge of the fact that it is easier and safer to open the trachea above than below the thyroid gland, as in the former case he is less likely to come into collision with the large blood vessels.

Similarly, the experience gained from Japanese surgical successes on, or rather off the battlefield, may well be taken to heart. The Japanese perform no operation whatever on the firing line, except in cases of extreme emergency when there is imminent danger to life from hemorrhage or from other causes. After taking all the necessary aseptic and antiseptic precautions, they leave all bullet wounds severely alone, remove the wounded to the rear and have the satisfaction of knowing that in the vast majority of cases the wounds heal by first intention, without causing any inflammatory or other pathologic conditions.

Not being connected with the military branch of the profession, I do not wish to encroach on the domain of others more qualified, by stating in detail how my suggestion for securing the services of specialists for the benefit of the rank and file could be best carried out, but there is one possibility of facilitating improvements in the desired direction, to which I would like to call attention. It seems to me perfectly feasible, in our large cities, to have military medical specialists, who could be called in whenever expert treatment at the hands of a specialist is of importance. I refer, for instance, to mastoid operations, in which the success depends entirely on the degree of competence and thoroughness of the surgeon, and in which the differentiation between the acute and chronic stages decides the method of operation.

The principles I have laid down in this address are not supposed to apply in a one-sided way to general practitioners only. They hold good, only in reversed application, for the training of the specialist as well. It is a mistake to assume that once a specialist has acquired a thorough knowledge of ear, nose and throat diseases, and their treatment, there is no need for him to trouble about any of the ills of other parts of the body. As I have already pointed out, the affections of special organs stand in close relation to the general functional activity of the body, and by narrowing his views, thoughts and opinions strictly to the details of his specialty, the specialist will promptly lose the all-important, comprehensive view of cause and effect in the mechanism of the human body. Again, the general condition of the body often determines whether or not a certain operation should be performed, whether local or general anesthesia should be applied, and, in the latter case, the anesthetic and the method of administration. For this and other reasons it is absolutely necessary that the specialist should keep in close touch with his professional brethren who have adopted the practice of general medicine and surgery. Both, the general and special practitioner, should realize that they are not contestants for opposing favors, but friends and comrades in the furtherance of a mutual cause, and, in the interest of suffering mankind, they should work together in harmony toward their common goal.

It requires no seer to foretell that a large amount of needless suffering would be prevented and a great many lives saved, if the suggestions I have thrown out were to meet with general approval and adoption. At the same time, in the present state of professional feeling, I see the possibility of difficulties obstructing our path, but those difficulties can and should be removed, as the interest of our patients is the primary and decisive factor, before which everything else—avarice, ambition, and imaginary ethical considerations—ought to fade into nothingness and vanish like a blinding fog before the rays of the sun. The feeling of fraternity between country physician and city specialist is by no means too hearty, but all good and true men, who have the real interest of our profession at heart, should unite in this movement, and, working hand in hand, further their own interests and raise the ethical level of the profession to a higher and nobler plane.

Means should be found for the whole medical brotherhood to be in closer touch, and a bond of union should be established which will make us all feel akin, whether we are country or city physicians, specialists or general practitioners. On these lines the medical organization of this country should be overhauled. Every member of the profession ought to be imbued with the all-pervading idea that he has not got hold of one exclusive thing, but that he dispenses his knowledge and ability in the services of mankind just like any other of his professional brethren. Broad and liberal views and principles should underlie our every thought and action, and if the arguments I have advanced should pave ever so slightly the way for diffusing the salient features of special training among the vast body of general practitioners, and for inducing the specialist unselfishly to reciprocate the latter's attempt at increasing their usefulness, it will mark the dawn of a perfected, idealized, medical organization, and I shall have the satisfaction of knowing that I have contributed my share toward discharging my obligations as chairman of this special section.

V 45
1905

Original Articles

A COMMON GROUND FOR MEDICINE AND DENTISTRY.*

FRANK I. PLATT, D.D.S.
SAN FRANCISCO.

The recognition of dentistry as a specialty of medicine by the American Medical Association and the International Medical Congresses, marks one of the happiest epochs in the history of both professions, for it has opened the way for a mutual understanding of conditions and study of theories beneficial to both, and destined to promote in no small degree the health and happiness of the human race.

The goal of both professions is practically identical, embracing as it does, all honorable means for the relief of suffering and for the cure and prevention of disease.

Within comparatively few years, the medical profession has made giant strides in preventing epidemics of plague, cholera, yellow fever and malaria, and is to-day

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

waging a relentless war, and one which will ultimately be successful, against the greatest of all scourges, tuberculosis.

Dentistry is no unworthy member of the great medical family, and many of its best and brightest minds are striving with unremitting toil to find means for the prevention of dental disease, and as their efforts are crowned with one success after another they will have but moved further along the common highway traveled by all the healing arts.

The fact that medical science in its various branches is putting forth its latest, and perhaps its greatest, efforts in the direction of the prevention of disease is the very best evidence of the progress and utility of this branch of applied science.

That such effort is demanded and intelligently received by the public furnishes encouragement for renewed effort, and demonstrates the fact that humanity is gradually coming to believe that the prevention of disease is even a greater and more valuable scientific triumph than its alleviation and cure. Admission of the importance and truth of this growing belief leads at once to the consideration of the subject of this paper.

It is an unfortunate fact that the course of instruction in medical colleges, except in a few instances, does not embrace a fairly comprehensive study of dental pathology and hygiene, for they have a direct bearing on other systemic conditions and play a most important part in the health and development of the individual. It would be well also if more particular attention were paid to the diseases of the eye and ear, and the gastric and intestinal disturbances of infancy and later life, as related to diseased conditions of the teeth and oral cavity, in our dental colleges.

The possession of a more general knowledge of these subjects by the practitioners of medicine and dentistry, combined with a greater sense of the obligation of trained minds to impart some of their learning to those dependent on them and less well trained, would accomplish much toward combating disease and bettering the general condition of the human race.

Considering the fact that human beings have inhabited the earth for perhaps fifty thousand years or more, and also that they have been suffering from various conditions of dental disease ever since Adam cut his teeth, it is astonishing how little general knowledge prevails regarding these organs, so essential to the health, development and appearance of mankind. Scarcely one mother in a hundred knows how many teeth there should be in the temporary set, and still fewer know when they should erupt or when they should be lost; and few, few indeed, are the parents who know that the temporary teeth play perhaps a greater part in the development of body and mind than the permanent teeth, and should receive from the day the first one appears, the most painstaking care tending to their preservation.

That expression so common in dental offices, "Why, doctor, that's only a baby tooth, you don't think that ought to be filled?" should be eliminated from the vocabulary of every parent, and there should be heard in its stead, "Doctor, I want my baby's teeth taken care of, every one of them, just as long as he needs them."

How few people we know who have reached maturity without the loss of one or more teeth. It was "only one tooth" neglected until it ached, and then it was extracted. Only one tooth, but its loss eventually disturbed the arrangement and utility of half a set of teeth. This leads to half mastication and half digestion, and whole indigestion.

Parents of all classes, from the dirty and ignorant to the refined and educated, bring their babies two, three or four years of age to the dentist, with their teeth even at these early ages, in all stages of disease. Some have only a few simple cavities, others have scarcely a sound tooth left; with exposed pulps, putrescent pulps, and even a few alveolar abscesses, discharging perhaps a spoonful of pus a day into the oral cavity.

The mother wonders why the baby does not grow, why he does not digest his food, why he does not sleep nights. The wonder of it is that the baby lives at all, and many of them do not live very long, and the cause of death may be traced right back to the septic condition of the oral cavity, back to the mother's ignorance, back to the fact that no one ever told her to care for her baby's teeth, not even the family physician who was present when the child was born, who attended him when ill during the period of dentition, and who should have known, and who should have seen that the mother knew how to keep the little mouth and teeth clean, and should have taught the importance and necessity for doing so. It is undoubtedly a fact, that many of the diseases of childhood, other than those considered incident to dentition, have their origin in diseased conditions of the oral cavity; including of course, dental caries; and it is no less true that throughout life many neurotic and gastric disturbances may be traced directly to the ignorance and neglect of the sufferer in regard to the care and preservation of his teeth. People, as a rule, do not first demand dental services except for the immediate relief of pain; a few, it is true, have learned by previous sad experience that it is well to consult a dentist once or twice a year to have their teeth examined and treated if necessary; and these few, although they do not know it, have reached an unusually high degree of human intelligence. They are well along on the highway of knowledge leading to that remote but beautiful goal when people will understand that it is wiser to employ physicians to keep them well than to cure them when ill. Since we as professional men know these facts, realise their importance and see every day the sad results of ignorance and neglect, since we know that without good digestion there cannot be good assimilation, and without both, good health and good development, since we know that good digestion depends very largely on a proper supply of good, clean food, passed into the alimentary canal through an oral cavity free from septic conditions and provided with the proper organs for its mastication and insalivation, is it not a duty we owe to ourselves and to humanity to impart this knowledge to those who so sadly need it?

This is the duty first of the physician, for his relations with the family are necessarily more intimate and begin at an earlier period than those of the dentist, and second, of the dentist, for by timely advice he may often prevent a repetition of the trouble in regard to which he has been consulted.

It is on this common ground, the instruction of the public in regard to the value, care and preservation of the teeth, and the prevention of disease, that the professions of medicine and dentistry may join hands and work together for the good of humanity and the honor of themselves.

THE PHYSICIAN AS A DENTIST.*

CALVIN WILLIAM KNOWLES, M.D., DD.S.
SAN FRANCISCO.

The physician has practiced his dental specialty for many years previous to the establishment of a dental college, which took place in about the year 1839. When conditions pertaining to the medical side of dentistry arose, in years gone by, it was customary for these cases to be referred to the medical specialist or general practitioner.

Dental colleges being organized and a more thorough medical knowledge being required, it was not so necessary for the opinion of a medical man in cases which involved the medical side of dentistry.

Dentistry is regarded by some as an art or science, rather than a specialty in medicine, for the average dentist is not a physician, has received no medical education whatever, and practically knows nothing about general medicine, or else has a very superficial knowledge of it. It will be useless for me to discuss or to dwell on this point, as it has been referred to and rehashed for a number of years, without really coming to any definite conclusion in the matter.

Dentistry as practiced by some men is a specialty in medicine. Dentistry ought to be on the same footing as medicine, that is to say—educational requirements, a four years' course and an M.D. Not until these are required, will a dentist be recognized on the same footing as a physician.

Physicians as a rule regard dentists as mere mechanics, or men who have received a smattering of medical education. Do you wonder why we are so looked on!

I am sure it was a great mistake when dentistry branched out for itself, and I am afraid the day is far distant when we are going to shake hands with our brother medicos and be licensed by a medical board, although I hope the day will soon come.

You ask the question: Why should a dentist be a physician? First, because he would have an accurate knowledge of medical science, and would be able to cope with many diseases, and recognize many conditions which he was ignorant of before. Second, when he sees his patient he will recognize his condition, note the condition of the heart, pulse, etc., or whether a contagious disease be present. Third, the benefits from the training he derives and the advantage his knowledge is to his patients.

The advantages of the physician-dentist, as I may term him, are as follows: Being an M.D., he is on a rank with all medical men, providing he is a graduate of a regular recognized medical college, and a licentiate of the state in which he practices.

The prestige which goes with the degree is of value not only in the medical profession but also in the dental. One's knowledge being superior, one's work and one's fees will be superior. People will willingly pay more for the services of one in whom they place much more confidence.

Are not these sufficient reasons for a broader medical education? I am sure that if dentists had the opportunity and could spare the time they would most certainly take a medical degree.

The word stomatologist takes the place of the word dentist in being a newer and more up-to-date one, the use of which has become quite common in the larger cities. By the word stomatologist, we understand one treating diseases of the mouth, and especially the teeth. It perhaps sounds a little more medical than the word dentist, and would fit the physician-dentist a little better than the ordinary word dentist.

In ancient medicine the physician practiced the dental specialty. In an old manuscript consisting of over 100 pages a most interesting account of the anatomy, physiology, medicine, materia medica and therapeutics is given. The following are examples of some of the aphorisms given in the manuscript:

There are three bones in a man's body, which when fractured will never unite again, and neither of these exists when a man is born, namely, a tooth, the knee pan and the os frontis.

To extract a tooth without pain. Take some newts, by some called lizards, and those nasty beetles which are found on ferns in the summer time. Calcine them in an iron pot, and make a powder thereof. Wet the forefinger of the right hand, and insert it in the powder, and apply it frequently to the tooth, refraining from spitting it off, when the tooth will fall away without pain, it is proven.

Bleeding and local applications, such as poultices and counter irritants, are frequently alluded to. The exact date of the manuscript is not known, but it was probably written about the end of the fifteenth century. So you see the early physician practiced this specialty also.

Dentistry is one of the oldest professions dating from the time when people were placed in front of the temples in order that they might gain relief. All down through the different ages literature has been contributed by the different observers.

Dental surgery has always been associated with education and scholarly men, and not with mere mechanics or tonsorial artists.

Our literature of the present century is elegantly written and illustrated with beautiful pictures, giving in detail the different oral deformities, and the modes of treatment by surgical or mechanical means. In our own United States there seems to have been in the last fifty years a very rapid growth and high degree of development in dental science, as compared with other countries. The percentage of qualified persons practicing dentistry is fully as large as those in other similar callings of life. It is stated that after five years only about 20 per cent. remain in practice, and that the qualified and successful are only about 5 per cent.

Dentistry as a science and art is a noble calling and is worthy of the best efforts and of the finest minds.

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

THE PHYSICIAN'S DUTY TO THE CHILD FROM A DENTAL STANDPOINT.*

ALICE M. STEEVES, D.D.S.
Dental Clinician to Boston University and to the Dispensary of the Good Samaritan.
BOSTON.

The possibilities for usefulness of the dental profession suggested to our mental horizon make us sigh and wonder if the time will ever come when the laity may receive the proper instruction regarding the real value of the organs of mastication.

Comparatively few understand and appreciate all that the faithful dentist may be able to accomplish.

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

V 45
1905

But too many either wholly neglect this important subject or, perhaps worse, make the best bargain counter contract possible with the man who guarantees "satisfaction or no money back" until the skillful esthetic dentist cries out, "hideous, all is hideous," "cleanliness next to Godliness" will not be in that mouth.

To whom shall we turn in this hour of doubt? To the vast army of educators, ministers, physicians, teachers of schools, and all public institutions.

But the public educator will tell us that the child must learn to keep his mouth clean at home. Then how are we to use all influence possible to reach that home, while the school officials are becoming educated to this crying need of the age? Many ways suggest themselves, but our nearest relative in the field is the family physician. He it is who welcomes the little stranger into the world, advises the mother on many subjects, and tells the father that such a boy will become a sturdy man. Let us ask our medical brother not to forget those protruding and receding jaws, or that those temporary teeth ought to do duty for a definite period, and that in order that they may accomplish this they should be cared for from the time that they appear as small white pearls above the pinkest of gums (let us hope that the gums are as pink as they should be) and that the loss of one single tooth means quite as much to the superstructure of that face as a sill from the side of a house. More than this, the teacher must present a clean, wholesome mouth else his instruction will be without effect. It is example as well as precept that tells.

We would also urge in their contact with other educators not to lose sight of the fact that the care of the mouth ought to be included with the hygiene of the body.

The many medical specialists owe a duty to the race. A case of gastritis treated without first cleansing the mouth and its contents, certainly not! The laryngologist in operating for adenoids must realize that often sufficient bacteria may be found in a single tooth cavity to infect a whole regiment of soldiers, providing an open wound is convenient as a culture medium.

Our friend the orthopedic surgeon has opportunities for good which are unexcelled; what an array of faces for beautifying! How much real good could be done! When, O when will all crooked faces become straight?

It would seem as if the physician in many instances needed more than a gentle reminder, for I find in looking over literature on diseases of children that the reference to teeth consists chiefly of the physiology of development and dentition, while the neglect of cleanliness and deformity caused by too early extraction is condemned in one instance only, and the very important item of correcting deformities from causes either traumatic or congenital is overlooked entirely.

Oppenheim speaks of the unsatisfactory information to be found in medical text books, but does not improve matters much. He emphasizes, however, the fact that it is unsatisfactory. Koplik points out the effect of malnutrition, syphilis and nervous irritation.

Doukin describes the pathologic conditions commonly supposed to be due to dentition. Rotch refers to development and dentition. Holt goes into the physiology and pathology from malnutrition. Jacobi speaks of the pathology of dentition and cautions against too early extraction, and Starr refers to development and dentition.

355 Boylston Street.

THE MEDICAL RELATIONS OF CERTAIN CONDITIONS OF THE MOUTH.*

L. DUNCAN BULKLEY, A.M., M.D.

Physician to the New York Skin and Cancer Hospital, Consulting Physician to the New York Hospital, etc.

NEW YORK CITY.

Although not specially occupied with disease of the mouth, I have such frequent occasion to inspect the buccal cavity in connection with dermatologic practice, that I have become very much interested in the subject. It also happens that many cases of disease of the tongue, gums, and buccal mucous membrane are sent to me, and many occur in my own practice.

The mouth occupies a very prominent place in the economy, as the point of entrance of food, and I need not, in this audience, dwell on the importance of having it, and all within it, in a proper condition. Few, among the laity at least, recognize fully the essential part which is played by the mouth and its appendages in the process of digestion, and consequently in the life and health of the individual. Mastication and proper insalivation are the first steps in digestion, and undoubtedly much ill health often results from the improper manner in which these are performed. I am convinced, from long observation, that hurried eating, imperfect mastication, soft food, and the taking of fluid while eatables are in the mouth, are fertile sources of trouble. This is a matter concerning which physicians and dentists should educate their patients. In this connection, of course, dentists render incalculable service, in placing the teeth, whether natural or artificial, in a condition suitable for their important work. As an illustration from the animal world, I may refer to the sometimes marvelous effects in poorly nourished horses, resulting from filing down the back teeth, as I have repeatedly observed in my own animals.

Incidentally, I would like also to mention the very great advantage of thorough mastication in sea-sickness. When other food will not remain in the stomach, one can often retain crackers or dry toast, thoroughly chewed and moistened only by the saliva, and it is a constant direction of mine to sea-going patients that these be so eaten while in bed; the mouth, though dry and parched, will in time moisten this food, and when thus thoroughly chewed the stomach seldom rejects it.

In considering the mouth, I have often been struck by the remarkable vitality of its tissues, which I think we hardly realize. Many times a day they may be subjected to repeated irritation from various foreign substances, or to mechanical damage, and yet how seldom are they permanently injured! The powers of healing of the buccal cavity sometimes seem to put all theories of surgical asepsis to naught. Bacteriologists tell us that a dozen or two different micro-organisms can always be found in the healthy mouth, and yet, somehow, none of them seem to exert a harmful influence in regard to the repair of injuries, even when pus, and presumably its coccus, is present. Witness the prompt healing after the extraction of a tooth, or even after the most serious surgical operation; and how rapidly a burn from hot food or drink, or from smoking, is healed. Surely nature has made wonderful provision to guard the portal through which the sustenance of the individual must pass, for many years.

The explanation for this is found, in part, in the

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

character of the saliva, as it is proper to designate the combined secretion of the various glands opening into the buccal cavity, including those of the mucous membrane itself; of all of which we know far too little. Like all other animal secretions, the saliva undoubtedly varies materially under different circumstances. We all know well the excessive and watery secretion, induced by pilocarpin and occurring in mercurial salivation, and the diminished secretion caused by atropin. Nervous causes may also at one time produce a free flow of saliva and at another may almost arrest the secretion, and leave the mouth dry and parched, as may also febrile diseases. The effects of food are also well known and the expression "making the mouth water," is often used in regard to certain appetizing articles.

How far or in what manner chronic disordered states of the system affect the saliva is not known with any degree of certainty, but that they do have some effect is beyond doubt; anyone who has had much to do with patients suffering from many minor or gross ailments, will testify to the constant mention made of the condition of the mouth. The saliva is often spoken of as thick, viscid, sticky, or pasty, and the taste as sweet, sour, bitter, or offensive, while the expression "a dark brown taste in the mouth" is very common in New York, at least.

Last year, Drs. Stern and Lederer[1] presented before this Section the results of some observations and studies on changes in the salivary secretion affected by systemic disease, which while perhaps not so accurate and complete as could be desired, are certainly a step in the right direction. Thus, in diabetes they found the saliva to be acid, in about one-third of the cases, and detected glucose in over one-half of them. In uricacidemia, the saliva was alkaline in nearly nine-tenths of the specimens, and uric acid was demonstrated in nearly one-third of them. In acute gastritis, the saliva was acid in 8 cases and alkaline in 20; in hyperchlorhydria the saliva was acid in nearly 40 per cent of the cases, alkaline in about 22 per cent., and amphoteric in over 35 per cent., and in hypochlorhydria the saliva was acid in 2 cases, alkaline in 15, and amphoteric in 6 cases. The acidity was found to be due to lactic acid, or to acetic acid.

While these studies do not by any means cover the whole ground, or even a very small part of it, they are, as just remarked, a step in the right direction, and should serve as a stimulus to others to corroborate or to add to them. Unfortunately, I cannot contribute any exact data in this direction. I have occasionally tested the secretions from the mouth in patients exhibiting marked acidity of the system, and have found them acid, sometimes neutral, or alkaline, but I have not kept records which can be utilized, so that I can speak only in a general way, hoping sincerely that those who have more time, or determination, will investigate the matter and give us scientific data to build on.

As already stated, the saliva undoubtedly varies in quantity and quality under different circumstances, and physiologists tell us that the total daily average secretion, in health, is from two to three pints. The solid ingredients vary according to different analyses, from 3.5 to 11.7 parts per thousand, and the salts from 1.03 to 2.2 parts per thousand. It is interesting to note, that while an analysis of the ash from saliva showed nearly 50 per cent. to be potash and nearly 10 per cent. soda, with a number of other ingredients, but no calcium, an analysis of the so-called tartar on the teeth showed that "the chief part of the inorganic constituents consists of calcium carbonate and phosphate," with some 20 per cent. of organic matter.[2]

All of us realize that different changes take place in the mouth at different times, but, so far as I know, no clear or definite knowledge exists as to the conditions causing them. Time and again decay in the teeth starts up suddenly, or the teeth are found unusually soft or eroded or tartar collects very rapidly, or a pyorrhea alveolaris occurs, etc., and no adequate cause can be determined with certainty. It is easy to ascribe these and other conditions to the action of micro-organisms, which undoubtedly have their share in the work, but we must remember that the buccal cavity is continually full of innumerable varieties of these, and more modern sciences, in various directions, teaching that microbes can not develop and become operative except in a suitable soil.

We must look, therefore, to the constitutional condition of the individual, as modifying the saliva, or soil in which the micro-organisms are bathed, and which in perfect health seems to possess such a marvellous power of protecting all within the buccal cavity from the inroads of bacterial life; even as the phagocytes in the blood guard the general system.

It is, of course, a common observation that debility or exhaustion of any kind often leaves its imprint on the structures within the mouth, as elsewhere. The less vital resistance there is in the tissues, the more readily do they yield to microbic invasion.

Dyspepsia is undoubtedly a fertile source of trouble in the mouth, as is constantly observed in the case of so-called "canker sores," and decay of the teeth may continually be found to vary with the condition of the stomach. In the studies referred to by Stern and Lederer,[1] in acidity of the stomach the saliva was found to be acid in nearly 40 per cent. of the cases.

The acid condition of the system associated with gout, rheumatism, and rheumatoid arthritis also has an effect on the teeth and gums, as I have witnessed time and again, in many cases of pyorrhea alveolaris, some of which I have watched for considerable periods of time. The disease has varied immensely at different times, according to the acidity of the system, often as indicated by the urine, and in many cases I have seen the very greatest benefit result to the condition of the teeth and sockets from a purely antacid treatment. We all recognize the value of alkalies locally in the mouth, and the injury from acids.

In the light of what has been said, should not the dentist, who is primarily responsible for the mouth, seek the aid of the physician in connection with many of the conditions about which he is consulted? Even as the physician recognizes the need of special skill in dental matters, and advises patients to seek it.

The subject of diseases of the mouth is a very large one, and can hardly be touched on now, but it is such an important matter, and dentists so often have the opportunity of seeing these affections early, when much can be done by proper treatment, that a few words may be of service.

1: Stern and Lederer: The Journal A. M. A., Dec. 10, 1904, p. 1763.

2. Hammersten: Text-book of Physiological Chemistry, New York, 1898, p. 281.

Syphilis is, of course, the most frequent cause of lesions within the buccal cavity, for few patients with this disease escape, at one time or another, from having some affection of the mucous membranes occasioned thereby: For many reasons, therefore, it is very important that dentists should appreciate and be able to recognize the effects of the disease in this location. This, of itself, is a very large subject, on which I have twice addressed the dental profession,[3] and which cannot be fully considered now. I must earnestly utter the warning, however, that dentists should be extremely cautious, whenever there are sores, even though they be very superficial, on the lips, tongue, or buccal mucous membrane, and that if not quite certain as to their character, they should seek competent advice before exposing themselves or their other patients to the dangers of syphilitic inoculation. As I showed in the first paper alluded to, there are many instances on record where this has occurred, and, of course, multitudes which have never been reported in the journals.

Aside from canker sores, from disordered digestion, leukoplakia is probably the next most frequent condition of disease found in the mouth, chiefly in men, and principally in those who use tobacco. This is commonly a harmless affair, though it may be the starting of an epithelioma, especially if it has been injudiciously treated. It will sometimes give trouble by mildly unpleasant sensations, and often perplexes the physician from its resemblance to some of the lesions of syphilis. Many a patient has long been under antisyphilitic treatment uselessly because of the persistence of this relatively innocent local affection, leukoplakia, which has no connection whatever with syphilis.

Epithelioma is the most important disease of the region of the mouth, and elsewhere, and it is in connection with this often lamentable affection that dentists can frequently be of the most efficient service, in many ways.

In a considerable number of cases of epithelioma of the tongue, and sometimes in that of the inside of the cheeks, the disease has started and is often kept up by irritation from sharp, rough, and decayed teeth, and from amalgum fillings, and these should all be sedulously looked to and corrected. Also, when there is any process suspected to be epitheliomatous, the patient should be urged to seek competent medical advice; for we know that while this disease begins as a purely local process, by neglect or by continued irritation it becomes deeply seated, the glands become infected, and often it is well nigh incurable. Happily, the former custom of touching all such sores with nitrate of silver or some other caustic is no longer largely practiced, but I must again raise my voice earnestly against all such meddlesome practice; for in times past I have seen many epitheliomata which had been thus goaded on until their condition was very serious.

Lupus also sometimes affects the gums and palate, but this is a disease which is so very rare in this country that it is hardly to be considered. It commonly exists elsewhere, especially on the face, before attacking internal tissues.

Localized tuberculosis, however, is not so very infrequent in or about the cavity of the mouth, and it is not infrequently mistaken for a syphilitic manifestation. Patients should be warned against neglecting this.

There is one more aspect of the medical relations of certain conditions of the mouth which I would like to mention before closing, that is the effect on the general system, or on special portions of it, in a reflex manner or otherwise, from error or disease in the teeth or jaws.

We all recognize the harm done to digestion by bad or imperfect teeth and have seen the great benefit to the general health resulting from a proper repair and adjustment of the organs of mastication, so that this process can be perfectly performed. Numberless instances are on record, and we must all have seen cases, where some error in the teeth and jaws has caused reflex disorder, headache, neuralgia, etc., which have ceased when the trouble has been rectified. Hence, the physician has frequent need of the dentist, and should ever bear in mind the assistance which can be obtained in this direction, in obstinate cases.

Finally, purulent discharges in the mouth, as from abscesses or from pyorrhea alveolaris, etc., passing into the stomach, have a more or less disturbing influence on digestion and nutrition, and should be corrected for this reason, if for no other. The same is undoubtedly true in regard to the results of decomposition of food lodged between the teeth, and from mouths not perfectly cleansed, one or more times daily. We all know the dreadful condition into which the mouth sometimes gets in acute or febrile diseases, with sordes on the teeth, and it is a question if some of the unpleasant general symptoms occurring in these cases are not caused by the gastric or intestinal fermentation thus set up. It seems certain that some of the discomfort to the patient, and possibly even some serious complications could be avoided if more attention were paid to antisepsis in the mouth at these times, when it is notoriously neglected.

I have jotted down a few of the many thoughts which have come to me, from experience, in the hope that a discussion of some of the points suggested may result in a more careful and complete consideration of the medical relations of certain conditions of the mouth.

531 Madison Ave.

DISCUSSION.

ON PAPERS BY DRS. PLATT, KNOWLES, STEEVES AND BULKLEY.

Dr. Vida A. Latham, Chicago, said that her experience in the last few years has been that the conditions of the mouth and teeth are based almost entirely on systemic conditions. One of the great objects of the work of this section is to try to show a relationship between the system and the teeth and adjoining structures. To her mind, syphilis has much to do with the condition of the mouth. She said that she has seen cases in her practice in which syphilis had been contracted, and in which the teeth before infection had been in splendid condition, and afterward discoloration, decay, erosion and abrasion have been marked, with interstitial gingivitis resulting in pyorrhea alveolaris and wasting of the alveolar processes. Dr. Latham said that saliva is a physiologic secretion, and it will remain for a specialist to work out the relationship between pathologic conditions of the saliva and constitutional diseases. In the last two years Dr. Latham has had two cases of gonorrheal infection of the mouth—the only two that she has ever seen. They were demonstrated by microscopic examination, and it was proved conclusively that they were due to infection from the fingers—uncleanliness—rather than from systemic cause. These cases were unusually peculiar. There was marked inflammation with much pain, the teeth became loose, there was a greenish, slimy condition of the gums, and there was slight fever.

Dr. M. I. Schamberg, Philadelphia, said that during the past year he had seen just such cases as Dr. Bulkley had mentioned. He saw one case of lupus, several cases of carci-

3. Bulkley: Dangers Arising from Syphilis in the Practice of Dentistry. Internat. Dental Jour., August and September, 1890. Manifestations of Syphilis in the Mouth. Trans. New York Odontol. Soc., 1898, p. 11.

noma of the mouth, and in one case the main interest lay in the early diagnosis. The dentist who referred the case to Dr. Schamberg did so because he was rather doubtful as to the condition. Microscopic examination of the growth, which was very slight at the time, showed it to be an epithelioma. It was treated by the *x*-ray, and an absolute cure took place. Several cases of syphilis of the mouth in various stages have come under Dr. Schamberg's care during the past year. The last case was an initial lesion immediately posterior to the superior central incisors. The case had gone on with a wrong diagnosis for three weeks, both the physician and the dentist failing to discover the cause of the lesion, and the condition was pretty bad. Dr. Schamberg questioned the patient as to possible inoculation, and also as to whether there was any eruption on his body; until he examined the body himself no thought of secondary-eruption had been suggested, but he found a very pale, macular syphilid on the abdomen, which decided the case. The mouth lesion had been masked by the application of caustics and other forms of treatment. Such cases show the necessity for thorough insight into medicine generally, and also that the general practitioner is too frequently derelict so far as studies of the mouth are concerned.

DR. G. V. I. BROWN, Milwaukee, said that the value of the dentist's work lies in being able to diagnose cases early. He referred to Dr. Bulkley's statement that the most frequent cause of lesions within the mouth is syphilis, and said that it is a difficult matter for those who deal with the lesions and do not treat syphilis in any sense except when forced to do so to decide whether or not the lesion is syphilitic. He is inclined to believe that syphilis as an etiologic factor *per se* is greatly over estimated. In some papers Dr. Brown thinks that too much emphasis has been laid on it. There are many cases in which a diagnosis of syphilis has not been made, and in which the one thing the patient needs is the proper treatment for syphilis, without which, of course, other measures would not only be useless, but would probably result in serious injury to the patient. On the other hand, Dr. Brown said that frequently time is wasted in endeavoring to overcome systemic conditions which do not exist, when simple, direct, prompt, surgical treatment is required.

DR. M. L. RHEIN, New York City, stated that he had occasion last year to take exception to the name of saliva as applied as being misleading. There are in the mouth the submaxillary glands, the sublingual glands and the parotid glands. It is true they are the salivary glands of the mouth, and that they give forth a large percentage of the fluid that circulates in the mouth, but added to these there are all the eliminative secretions of the mucous follicles, which add materially to this fluid. Up to the present, this portion of the fluid has had no recognition given to it as having any of the function that pertains to salivary glands, and it is for this reason, Dr. Rhein said, that exception should be taken to the use of that term. He declared that he knows that a great many workers take exception to this criticism, and prefer to use the word "saliva" as it has been used in the past. Dr. Rhein agreed with Dr. Bulkley in his explanation of some of the lesions of the mouth and said that the great trouble is that the majority of physicians have no knowledge regarding the normal physiologic condition of the mouth, and consequently when they examine an abnormal mouth they are at sea in regard to making a proper diagnosis either of what may be wrong, or as to whether it is even abnormal as distinguished from physiologic. He said that he has had most startling experiences of this kind, and finds that the medical text-books on this subject are almost of no value. In most instances, the conceit of the average medical teacher carries him past this important specialty. To illustrate the average medical man's idea of the mouth, Dr. Rhein told of a patient who presented himself last fall with lesions in his mouth that Dr. Rhein had no hesitancy in diagnosing as marked leukoplakia, and of such a nature that he thought there was strong suspicion of syphilitic etiology. He found that the physician under whose care the patient had been for a number of years had overlooked important facts; he seemed to have paid no attention to the patient's history of losing his hair about five years previously and to other symptoms. On the physician being requested to look into the mouth symptoms, he informed Dr. Rhein by telephone that it was simply an inflammatory condition, and that in a few weeks the patient would be perfectly well. Six weeks later the patient had not only not been cured, but the symptoms had increased in severity; there was an active pathologic condition present that was so apparent that Dr. Rhein refused to have any further connection with the case unless some attention was promptly given to the general condition, and when he again called the physician's attention to the patient he finally took him to another practitioner who at once confirmed the diagnosis of leukoplakia of syphilitic origin. The patient was placed on antisyphilitic treatment and the symptoms were decidedly ameliorated. Dr. Rhein believes that a large proportion of cases have a decided cause of this nature. The trained stomatologist has opportunities for the minute and careful observation of what he sees in the mouth that so educates his sense of perception between the various conditions that it places him in a peculiarly fortunate position as regards diagnoses. He believes that there is no gainsaying the fact that has made the value of the dental services to the public at large in this country of inestimable value as compared with what they have received in other parts of the world, and that is the absolute thoroughness of the work. Dr. Rhein said that there is no reason why the highest scientific utilization of research work of all that we can gain in medicine should not be put to advantage in what is apt to be described at times, and that is the handiwork of the dentist, and he protested against taking one iota of credit from the value of that handicraft.

DR. DUNCAN BULKLEY, referring to stomatology vs. dentistry, said that physicians do not have to do with the teeth entirely; but with a thousand other things as well. Stomatology, he said, is of very great advantage, and if that can be introduced everywhere I think it will be a step in advance. He agreed with Dr. Brown that one thing must not be praised to the disparagement of another. American dentistry is recognized all over the world. There are many cases of pyorrhea alveolaris which it would unquestionably be folly to send to a physician. In those cases which have been under his care he has used peroxid of hydrogen freely. Undoubtedly, the first item is proper surgical treatment and perfect dental cleanliness. On the other hand, he asked why a patient has this condition; it is not from the parasites in the mouth. In reference to the saliva, he said that nine-tenths of it is made from the three groups of glands, but the mucus must, of course, be counted. He did not agree with Dr. Rhein as to using the word "eliminative." There is no reason, he said, to believe that these glands of the mouth have any eliminative function; it is simply a moistening process. He called attention to the fact that some of the best dentists are studying and have studied medicine since they began practicing, and are now graduates in medicine. All branches of medicine should be co-ordinate.

Dr. Bulkley said that he still holds that almost everybody who has had syphilis, at some time or other, has had mucous patches; he has had some patients who have been infected from soiled instruments. He has seen chancre in almost every part of the mouth and tongue. He also stated that he has seen many cases of wasting of alveoli. In time gone by it was supposed that mercury did this, and it created a great furore against mercury. He asked how many physicians have reason to believe from their experience that mercury does salivate. Dr. Bulkley has not yet found cases in any number in which he thought the mercury was responsible. He has had cases with syphilitic alveolar trouble. He said that he does not know anything about the saliva in syphilis—whether or not it is modified, though he is sure that it is altered in syphilis. The saliva is not an excretion; it is a secretion, and that secretion can be altered by disease. He has never happened to come across any cases of gonorrhea of the mouth. He distinguishes between leukoplakia and syphilis. Legally, one does not speak of syphilitic leukoplakia any more than of syphilitic psoriasis. Leukoplakia is one thing and mucous patches of various degrees are another. There is

V 45
1905

a great deal of leukoplakia sometimes from smoking and from unknown causes, which he is sure is not syphilis. The diagnosis is often very difficult. He concluded by saying that we are just entering on the right aspect of what has been called dentistry.

EARLY DIAGNOSIS OF SURGICAL DISEASES OF THE URINARY TRACT.*

BENJAMIN TENNEY, M.D.
Assistant Surgeon Boston Dispensary.
BOSTON.

For the purposes of this paper the urinary tract will be limited to the kidney, ureter, bladder and prostate. The prostate, although essentially a genital organ, when diseased, interferes more with the urinary function than with the genital function, and must not be left out of account in any discussion of the urinary tract.

That early recognition of diseased conditions in these organs makes the desired "cure without undue risk, delay or pain" more often possible needs no argument, and to the physician who uses his trained brain, fingers and eyes, especially if he has access to a good microscope, there is little difficulty in recognizing the indications for further careful investigation of the urinary tract by the most modern methods of special diagnosis.

Interesting as these special instruments are, and fascinating as is their use, this paper is to deal briefly and solely with the indications which should lead to the employment of one or more of them.

In order to obtain some idea of the frequency of diseases in these organs as compared with general surgical diseases, the annual reports of the Massachusetts General and Boston City Hospitals have been taken for the last five years. During this period there were over 35,000 cases in the surgical beds of the two institutions. More than 1,100 of these are said to have presented some lesion of these organs, being about 3.1 per cent. of the total surgical admissions. The prostatic diseases lead, with 427 cases; the kidney follows, with 373 cases; the bladder next, with 304 cases, and the ureter last, with 7 cases. The grouping in this table is my own and requires further evidence before it is fully accepted, though it is in accord with the more recent theories.

SYMPTOMS.

Most patients with disease in the urinary tract consult their physician on account of one or more of three conditions. First, localized pain; second, altered function; third, hematuria. When all three symptoms are present, there is hardly a doubt of the presence of some definite surgical condition in the urinary tract.

That there may be some condition outside which reflexly excites symptoms is indicated by a case recently seen with Dr. Mitchell of Portland, Maine. Dr. Mitchell had done a complete and satisfactory perineal prostatectomy a few days previously; the healing was perfect and urethra free, but the man continued to have pain referred to his bladder, and he urinated every half hour. Naturally, blood and some pus were present in his urine. Finding tenderness over the right kidney and along the ureter, I suggested exploration, but both kidney and ureter were found to be normal.

At autopsy two months later, a bony tumor of the bodies of the lumbar vertebræ was found, not causing direct pressure on either kidney or ureter, but presumably irritating the nerve supply of the bladder. This combination of conditions is so very rare that it may be disregarded in making a preliminary diagnosis.

When any two of these symptoms are found, I believe that all surgical conditions in the urinary tract should be ruled out before attention is directed to other organs, or the patient is left to Nature somewhat upset by the various so-called urinary antiseptics and sedatives.

SURGICAL DISEASES OF THE URINARY TRACT
IN BOSTON CITY HOSPITAL AND MASSACHUSETTS GENERAL HOSPITAL FROM 1900 TO 1905.

KIDNEY.		
Inflammatory::		
Pyelitis	13	
Pyonephrosis	32	
Perinephritic abscess	39	
Tuberculosis	48	
Calculus	72	
Total	194	= 51%
Mechanical:		
Hydronephrosis	27	
Movable	90	
Rupture	25	
Total	142	= 38%
New growth:		
Sarcoma	19	
Carcinoma	6	
Hypernephroma	7	
Adenoma	1	
Cystadenoma	1	
Neoplasm	1	
Total	35	= 9%
Other disease	5	
Grand total	373	
URETER.		
Inflammatory:		
Tuberculosis	1	
Abscess	1	
Ureteritis	1	
Total	3	
Mechanical:		
Stricture	2	
Calculus	2	
Total	4	
New growth	0	
Grand total	7	
BLADDER.		
Inflammatory:		
Cystitis	100	
Tuberculosis	24	
Total	124	= 41%
Mechanical:		
Calculus	98	= 32%
New growth:		
Carcinoma	29	
Papilloma	11	
Sarcoma	1	
Total	41	= 13%
Other disease	41	
Grand total	304	
PROSTATE.		
Inflammatory:		
Hypertrophy	329	
Prostatitis	40	
Abscess	30	
Tuberculosis	3	
Total	392	=91%
Mechanical	0	
New growth:		
Carcinoma	26	
Adenoma	4	
Sarcoma	3	
Total	33	= 8%
Other diseases	2	
Grand total	427	

"Other diseases" includes all cases with diagnosis of hemorrhage and others without definite diagnosis.

Of the single symptoms pain is of little value in directing attention to the urinary tract, and the great majority of pains without disturbance of function or blood in the urine will be found to be caused by some other organ or system.

*Read before the Surgical Section of the Mass. Medical Society, June 13, 1905.

Disturbance of function is almost worthy of being called pathognomonic. The normal adult individual, under average conditions of heat, excitement and drinking, empties his bladder from four to seven times a day, and should be able to sleep seven or eight hours undisturbed. There should be no difficulty, discomfort or urgency about the act. Regular variations from these habits are the first of all symptoms to appear in several urinary diseases and must be inquired into carefully and regarded with grave suspicion when persistently present.

Hematuria always means something wrong in the urinary tract and when persistent or when recurring intermittently it should lead to careful study as to its source and cause, not because the loss of blood is always dangerous, although it may hasten the end in some conditions, but because it is almost invariably an indication of some serious and possibly curable condition.

It is possible for a patient to have some surgical disorder of the urinary tract in which none of these symptoms appear for months, but under continuous observation something will be found if these organs are kept in mind.

So far as I have been able to look up records, there is only one of these surgical conditions which may not be found at any age. Infants and children have been reported as having movable kidneys, calculi, malignant growths, and in fact all these diseases except prostatic hypertrophy.

Beyond the fact that most of the movable kidneys recorded are female and all the hypertrophied prostates male, either sex may suffer from any of these conditions.

Instead of discussing the symptoms of each disease separately, I have grouped the most important symptoms and attempted to show why they appear under different conditions.

PAIN.

Pain from disease of the kidney may be felt at the point of injury or may be referred to the opposite side or to some distant point. Any mechanical condition which interferes with the outflow of urine, such as a kink in the ureter, or stone, or clot, or swollen lining, or tumor pressure, or stricture, or ligature, which prevents the free flow of urine from the kidney, will cause pain varying in degree according to the location and character of the obstruction. The same sort of pain may be felt in certain infections of the kidney in which the bulk of tissue within the capsule is increased, or in which there is hemorrhage under the capsule, or after artificial distention of the pelvis.

As has been previously pointed out, there are some observations which go to show that the kidney is extremely tolerant of all conditions which do not stretch its capsule, and that simple slitting of this capsule for a time will relieve the pain of pelvic distention, even when caused by stone in the ureter. How much, if any, sensation is possessed by the kidney beyond its reaction to capsular stretching or to what is sometimes called internal pressure I do not know.

Many malignant growths cause no pain for a long time, especially in children. The same is true of some renal calculi, but just as soon as a blood clot or fragment of tissue, or bit of calculus plugs the ureter, the typical attack of pain begins.

Palpation of a normal kidney, even if considerable force be used, causes no pain; packing, washing out or removing drains in the pelvis causes no pain in an exposed but uninfected kidney. Possibly its only sensory nerves lie in the capsule or walls of the pelvis. Of this we ought to know more.

If there is any characteristic of pains arising in the kidney it is their radiating character. They may be referred to any point between the shoulder and ankle on the same side, to the region of the opposite kidney, to the pelvis, or to the abdomen generally, and all at the same time.

Pain in the ureter is produced by stretching or distention. Passing a ureteral catheter into a normal ureter, even if purulent urine is flowing through it, causes less pain than passing a soft rubber catheter into a urethra. Apparently there is little sensation except that of tension in any case, but this may become extreme pain when a concretion is being forced down by the peristaltic contractions.

There is no possibility of being sure whether a pain which a patient describes is due to a renal or to a ureteral condition without other evidence. The patient's sensations may be precisely the same in either case. The bladder is not sensitive unless inflamed, and then it tolerates catheters and drainage tubes which are not moved about. Most of us are aware of the location of the dull ache of an acutely distended bladder, yet many patients carry from a few ounces to some pints of urine constantly without being conscious of it. From one woman who was not suffering very greatly I drew six quarts and half a pint of urine within one-half hour, and this is much below the greatest record.

Some patients with tuberculosis and new growths in the bladder suffer very little during the early stages, when radical treatment may be expected to produce the best results. One of my patients with cancer of the bladder had pain only on urinating until the growth reached a size which mechanically obstructed the urethral orifice. Many patients with calculi are reported to have suffered little until the bladder mucosa became damaged and infected.

In prostatic cases the patients suffer pain like that in kidney disturbances caused by stretching of the capsule in acute inflammatory conditions and from the secondary changes which occur in the obstructed bladders. Pain from prostatic trouble alone is usually referred to the rectum, glans penis, or perineum. When the bladder is involved there is the local discomfort before referred to, and often the almost constant tenesmus due to irritation at the orifice of the bladder and in the prostatic urethra which may amount to pain.

Of the diseases presented in the cases from the two hospitals, those representing acute infections are most likely to cause constant pain, those representing or producing foreign bodies, such as calculi, or clots of blood or pus, or good-sized fragments of tissue almost always produce intermittent pain, while the new growths may be painless for years.

In a general way, pain is more likely to be referred to a point below its origin than above it, but disease of the lower part of the tract is so likely to lead to infection or to painful distention above it that there is always a possibility of being led astray.

ALTERED FUNCTION.

Somewhere I have read that the act of urination begins with a pull of the ureteral muscle fibers which bound the trigone and are continued into the verumontanum of the prostatic urethra or to a corresponding point in the female urethra.

This muscular pull opens the internal orifice and al-

V 45
1905

lows some fluid to trickle into the urethra. The voluntary sphincter may now contract and force the fluid back for a time or allow it to pass on. If this description be correct, and I know of no anatomic, experimental or personal reason for doubting it, it explains how the function may be altered by conditions remote from the bladder.

Frequency.—Frequency of micturition may be increased by any condition which diminishes the capacity of the bladder or causes irritation of these lower ureteral fibers.

In cystitis, therefore, when the capacity of the bladder may be reduced to a few cubic centimeters, in tumor and calculus cases in which there is constant irritation of the trigone, and especially in the occasional acute inflammations which accompany an enlarging median lobe of the prostate, and which directly affect these fibers, we may expect increased frequency of micturition. To explain its occurrence in renal and ureteral conditions, it is only necessary to recall the continuity of the ureteral fibers from the kidney pelvis to the verumontanum or the corresponding point in the female urethra.

We have all known the frequent dribbling overflow of a distended bladder to be mistaken and treated—or neglected—as an "inflammation of the bladder" or a little "kidney trouble." There is no excuse for a physician's making an error of this sort. He has no right to guess when he can find out.

Urgency.—Some individuals find it impossible to resist the impulse to urinate. If they attempt to prevent the flow, they leak. In every case there is an uncontrollable contraction of the bladder, due possibly to irritation of the lower ureteral fibers, to a calculus in the ureter or bladder, to a new growth in the bladder, to an enlarging median lobe of the prostate, to an inflamed condition of the urethra nearest the bladder outlet, or else to an incompetent voluntary sphincter, any of which conditions may disturb the normal relation between bladder capacity and contraction.

I have seen examples of all these conditions and doubtless there are others that will produce the same symptom. It is too suggestive to be neglected and must bear an intimate relation to

Incontinence.—Except in the overflow of distended bladders and as it may suggest search for and removal of all irritations wherever found, incontinence of urine has no surgical significance in this paper.

Difficulty in Urination.—This is perhaps as common a symptom as any and results from either mechanical obstruction or from some fault in the nerve supply. It occurs in conscious patients with paralysis of the abdominal muscles and competent sphincter, as well as in those who are in a comatose or delirious condition.

My observation has led me to believe that paralytic and comatose patients are quite as apt to be incontinent as to have retention, unless there is some obstacle which they had previously been able to overcome by voluntary abdominal pressure.

The mechanical obstruction of which we hear most to-day is the hypertrophied prostate, and while unable to discuss it as I should like, I would remind you that it is not a disease of advanced life exclusively. Several cases have been reported in the thirties, and between forty and forty-five the number of men whose prostate begins to produce some discomfort and residual urine is very considerable.

Anuria.—This may occur in the course of certain acute diseases, as a result of some forms of poisoning, after trauma to the urinary tract below the kidney, or to the kidney itself, from vaguely understood reflex disturbances outside the urinary tract, and from any condition which mechanically obstructs the flow of urine into the bladder. The last group of cases is not always easy of separation from the others. Fortunately patients usually go from two to five days before symptoms of uremia appear, and this allows sufficient time, if properly used, for decision and for operative measures if necessary. Absence of urine in the bladder during twelve consecutive hours, if proved by a catheter, may well arouse grave apprehensions, and twenty-four hours is a limit beyond which the responsibility lies very heavily on any single practitioner.

HEMATURIA.

Red blood may show in the urine in amounts recognizable to the naked eye, with or without clots, or in such quantity as only to be recognized by the aid of the microscope. In either case, it may be intermittent in appearance, but in the first case blood is likely to be found on microscopic search long after it has apparently disappeared.

While it may come from any part of the urinary tract and from several causes, persistent or recurring hematuria is so strongly suggestive of a new growth that, next to anuria, it is the gravest single symptom of all.

According to Albarran, hemorrhage was the first symptom in 78 per cent. of 140 malignant bladder tumors and was present at some period in nearly all. According to Israel, 70 per cent. of 66 malignant renal tumors were first indicated by hemorrhage, and 93 per cent. showed it at some period. Deneclara, in 168 cases of tumor of the kidney in the adult, found that hemorrhage was the first symptom in 69 per cent. Even under exceptionally favorable conditions the cause and source of the hemorrrhage may remain in doubt for years.

A patient of mine had hematuria for three years without renal symptoms or palpable tumor. There was no loss of weight or strength and he was particularly active physically. He had a slowly growing prostate with considerable swelling and redness of the median portion, as seen through a cystoscope, which was supposed by one of our most experienced men as well as by myself, to be the source of the hemorrhage. A third surgeon, seeing him six months later, found a distinct renal tumor and a hypernephroma at operation. This experience has taught me never to accept a probable cause of hematuria without ruling out other possible causes.

While hematuria may possibly be due to some harmless condition, its almost constant association with malignant disease and calculi, make it, to my mind, quite as grave, though not so urgent a symptom as anuria of a few hours' duration.

All writers agree that blood in the urine appearing without reference to any physical violence, exertion, or jarring, is very suggestive of new growths. When the hematuria follows such violence, even if slight, they consider it more probably due to the presence of a calculus. In either case it is a hematuria.

If there be also a pyuria, the diagnosis is complicated by an infection which may wholly account for the hematuria or which may be a secondary process grafted on to the original disease.

Continuous or Recurring Discomfort.—This brings

us to the most frequent of all urinary conditions—continuous or recurring discomfort rather than pain, often poorly localized, little if any disturbance of function, little if any blood in the urine, but pus in the bladder, urine continuously in varying amounts. The majority of patients with these symptoms can be cared for by any man who will handle a catheter and his solutions in a cleanly way; many will recover if they will wash themselves out by drinking enough water, but the other sort who continue in about the same condition for months, swallowing everything from hexamethylenamine to various nostrums, are the patients who appear later with incurable tuberculosis, or inoperable cancer of bladder, ureter or kidney, with trabeculated and rotten bladders, with kidneys ruined by calculus obstruction, or honeycombed with pus, or transformed into that puzzle of the pathologist—amyloid. These are the cases which arouse regret in the mind of the surgeon, or of the pathologist.

If these symptoms will disappear at all under irrigation and monosyllabic or polysyllabic treatment, they will go within a few weeks at most. If they persist longer, either the infection is not reached by the bladder irrigation or controlled by the chemicals, there is an infection in the deeper tissues, or else the pus is masking some condition like a calculus or a new growth, which is entirely distinct from the infection, though it may be the predisposing cause.

This is the time to study the case by every available method until the condition is understood and proper measures and time for treatment are determined. A patient neglected at this stage may get well from a colon bacillus pyelitis or may pass a small calculus through the natural channels, or possibly make a spontaneous recovery from a tubercular infection, but who can tell which patient will do this and which get steadily worse.

Of pyelitis, Kelley of Baltimore says in substance: "It is of the utmost importance, but is rarely recognized in the earlier stages, or when found is often thought unworthy of attention because not immediately provocative of serious symptoms. The kidney is an organ more necessary than the uterus or Fallopian tubes, but there is a general indifference to mild cases of pyelitis, while the large pus kidneys are noticed. It is important to recognize any grade because the severe cases may result from the mild."

Pyelitis, pyelonephrosis, pyonephrosis, perinephritic abscess, all infective processes, cover one-fifth of all surgical kidney admissions to the two hospitals. If to these we add the cases of tubercular infection which may also show early purulent urine, we take in nearly one-third of the surgical kidneys.

If we follow modern theories and include the calculus cases as caused by an earlier inflammatory condition which might possibly have been recognized, we find that one-half of these surgical kidneys might have been suspected in an early stage from the presence of pus in the urine, and that the patients might possibly have been spared some suffering at least.

Inflammatory processes in the bladder are likely to be recognized earlier because of the alteration in function which nearly always accompanies them and because of the pain which also impresses the patient with the idea that something is wrong.

The inflammatory condition which persists longest without symptom is found in prostatic hypertrophy. Often nothing is noticed by the patient until he suddenly realizes that he has to rise one or more times at night to empty his bladder. This symptom in a man over 40 is always suggestive and characteristic of a bladder with residual urine.

General Symptoms.—Patients with surgical disease of one kidney are apt to sleep on the affected side; varicocele may develop on the same side as a kidney tumor; kidneys with acutely distended pelves and capsules are exquisitely tender, while some hydronephrotic kidneys and very large tumors may be little sensitive. Rectal or vaginal touch may discover tenderness over the lower end of one ureter indicating trouble higher up on that side; median obstruction in the prostate is not always to be felt by the rectum. A tender "Israel's point"—junction of twelfth rib with the outer border of erector spinæ, is valuable in identifying the kidney as a source of vague abdominal pain. The normal kidney, ureter, bladder and prostate are not painful under reasonable pressure.

SUMMARY.

Localized pain, altered function, hematuria, with or without pus—these are the cardinal symptoms of surgical disease in the urinary tract. Tumor, tenderness and residual urine do not require complicated apparatus for their recognition, and their presence or absence can be determined by any physician who will take the trouble to examine his patients properly. These preliminary points are simple, sufficient for a correct diagnosis sometimes, and always trustworthy in indicating the urinary tract as a source of trouble. Nothing in surgery requires more concentrated attention, more accurate observation, or a finer technic, than a complete and correct preoperative diagnosis of the more obscure conditions in the urinary tract which stand between our patients and health.

LATERAL DISPLACEMENT OF TENDON INSERTIONS FOR THE CURE OF STRABISMUS.*

EDWARD JACKSON, M.D.,
DENVER.

The recti muscles act on the eyeball from a common origin. Their normal directions prolonged backward would pass practically to a common point in the outer, lower wall of the optic foramen. Their differences of action depend on differences of insertion. By lateral displacement of its insertion one rectus might be made to take up the function of either of the others. A displacement of not more than 15 mm. up or down, and out, would cause the internus to perform the function of the superior or the inferior rectus.

Some lateral displacement of the insertion of the recti tendons is possible; and any portion of such lateral displacement can bring about a corresponding change of function. Conceive a plane passed through the insertions of the recti muscles roughly perpendicular to the antero-posterior axis of the eyeball, intersecting the sclera in the circumference of a circle. Then the new function of the muscle, produced by the lateral displacement of its insertion, corresponds to the sine of the arc of that displacement.

Let Fig. 1 represent such a circumference with the internal superior, external and inferior recti insertions at A, B, C, D, respectively. If the insertion of the internus be removed from A to E, it will continue to turn

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

the eye inward with a force measured by M O, the cosine of the angle A O E. But it will also tend to turn the eye upward with a force proportioned to M E, the sine of the angle A O E. As the angle A O E is increased, its sine increases, while its cosine diminishes. If the displacement were through 90 degrees, bringing the insertion of the internus to B, the cosine of the angle becoming zero and the sine equal to the radius, the full force of the internus would be exerted in turning the eye up.

The eyeball and the recti muscles are not suspended freely in the orbit, so that neither rectus can have its insertion displaced laterally until it can replace in function one of the other recti muscles. Still, they are each capable of sufficient lateral displacement to give very important practical aid in the correction of strabismus. Each muscle lies embedded in tissue from its origin to its insertion. Its sheath is more or less closely connected with adjoining tissues throughout. Still, the tissues surrounding the muscles are comparatively soft and yielding, and the adhesions of its sheath have little more power to prevent its lateral displacement than to prevent its advancement or retraction. Moreover, the form of a rectus muscle is distinctly favorable to lateral displacement. Starting from a comparatively narrow tendon of origin, it broadens to a comparatively wide (8 to 12 mm.) tendon of insertion; and within the limits

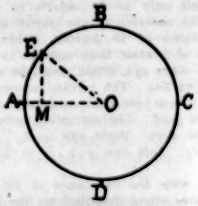


Figure 1.

of this breadth of insertion it is capable of almost free lateral displacement.

Let Fig. 2 represent the origin of the rectus muscle and B C its insertion. In its normal condition we may regard the force of the muscle as exerted at the middle point D of the insertion. But if the whole insertion be divided except at the point B, and the tendon of the insertion gathered together so that the force of the muscle will be exerted at that point, the effect will be equivalent to that of a lateral displacement, by half of the width of the tendon of insertion. The form assumed by the muscle will be approximately that shown in Fig. 3.

The alteration of functions of the recti muscles by lateral displacements is favored by the fact that under normal conditions the function of each of the recti muscles varies with the direction in which the eyeball is turned. For instance, with the eye turned strongly inward, the superior and inferior recti come to the assistance of the internus and aid in convergence. With the eye turned strongly outward, they lose all tendency to turn the eye inward and may even aid divergence. Since the superior and inferior recti thus normally become adductors or abductors of the eyeball, it is possible to alter their function by lateral displacement without seriously disturbing muscular co-ordination and control.

The two ways in which I have accomplished lateral displacement of the tendon insertion are partial tenotomy and complete tenotomy, with suture of the tendon to the site of desired insertion. The latter will not be dwelt on here, as I have described[1] it at length in reporting two cases in which lateral displacement of the superior rectus was done for the relief of paresis of the superior oblique.

PARTIAL TENOTOMY.

The division of the tendon begins at one edge of the insertion and extends beyond the middle. To have very much effect, almost the whole breadth of the insertion must be divided. But sufficient tissue should be left to keep the uncut side of the tendon perfectly firm. Any

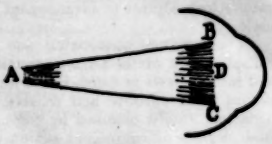


Figure 2.

giving of the undivided margin, either at the time of operation or subsequently under inflammatory changes, will diminish the lateral displacement and give somewhat the effect of a setting back of a tendon as by ordinary tenotomy. Therefore, in making this kind of a partial division of the tendon, the whole tendon should be raised on the strabismus hook and drawn on so that the operator will know just how far the firm tissue of the tendon extends.

I have practiced lateral displacement by a partial tenotomy on the superior and inferior recti muscles chiefly for the correction of excess of convergence. Partial tenotomy may be done as the sole operative procedure. For this purpose an incision is made over and parallel to the nasal margin of the superior rectus tendon, 5 or 6 mm. long and commencing 3 mm. back from the cornea. Through this incision a strabismus hook of medium size is to be introduced, passed beneath the tendon, and drawn on until the temporal margin of the tendon is well defined. Small, blunt-pointed tenotomy scissors are then introduced between the strabismus hook and the sclera, with one point behind and the other in

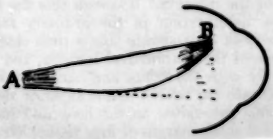


Figure 3.

front of the tendon, and so much of the insertion as may be desired is divided.

The lateral displacement produced will be greater if the nasal margin of the tendon is "stripped" for 8 or 10 mm. back from its insertion. "Stripping" is done by passing the point of the strabismus hook backward from the insertion, alternately over and beneath the margin of the tendon; and by using the points of the scissors in a similar manner and snipping any adherent lateral bands.

A similar incision is then to be made along the nasal

1. Ophthalmic Review, March, 1902.

border of the inferior rectus tendon and the same operation repeated on it. Both the superior and the inferior tendons must be laterally displaced at the same operation; and generally to an equal extent, although for vertical strabismus or hyperphoria the displacement may be made unequal.

This operation, successfully done, is followed by no diplopia, and by no more reaction than ordinary complete tenotomy. As with other muscle operations, the extent of the hemorrhage and the inconvenience it may cause vary and can not be exactly foreseen. My experience with this form of operation, done alone, is too small to estimate the extent of its influence. But it has proved a satisfactory adjunct to advancement of the opposing muscle.

EXTENDED TENOTOMY.

Lateral displacement of the tendon insertions of the superior and inferior recti in connection with tenotomy of the internus is an effective and reliable operation. The unsatisfactory results obtained by complete tenotomy for high degrees of convergent squint were early noted and commented on. One of the early operators, Phillips, beside dividing the tendon, separated the eyeball from all overlying tissue on both sides of the tendon, and thus undoubtedly encroached on the nasal margin of the superior and inferior tendons. It was said that he obtained satisfactory results in cases that other operators failed to relieve. Velpeau mentioned this practice, with approval based on his own experience. But it seems never to have secured general recognition as an established procedure. Phillips said he sometimes extended his incisions so as to include one-third of the surface of the eyeball. But this would probably involve only a minor part of the width of the superior and inferior tendons; and the lateral displacement thus secured would be but slight. However, the practice was attended by no disastrous results, such as followed repeated tenotomies or the division of the internus too far back.

The operation that I have practiced begins with a complete tenotomy of the internus. Ordinarily for tenotomy of the internus I make the conjunctival incision radiate from the center of the cornea. For this operation, however, I prefer a rather long incision, 10 mm., almost parallel to the corneal margin and slightly in front of the insertion of the internus. Through this the internus is divided at its insertion in the ordinary manner. A strabismus hook of moderate size is then entered at the upper angle of the conjunctival incision, and carried in close contact with the sclera and cornea backward and upward beneath the tendon of the superior rectus. The tendon being well raised on the hook and its temporal margin (that is, its margin of firm tissue) clearly recognized, the scissors are introduced and the nasal one-half to three-fourths of the tendon divided at its insertion. More than one-half of the tendon must be divided to get any decided effect, and the care before mentioned must be exercised to leave at least 2 mm. of the firm portion of the temporal edge of the tendon still attached. Before introducing the strabismus hook the points of the scissors may be used to divide the tissues about the nasal margin of the superior tendon; and before cutting that tendon the hook may be pressed back along the edge of the tendon, as before described, to free it from attachments. This "stripping" of the edge of the tendon may be carried back one-half inch or more from the insertion.

The making of the conjunctival incision approximately parallel to the corneal margin renders it comparatively easy to do conjunctivally the partial tenotomies of the superior and inferior recti from the upper and lower angles of the incision. To prevent falling of the caruncle after such an incision, however, it is well to dissect the overlying tissue rather freely from the tendon of the internus before cutting that tendon; and to complete the operation by bringing together the conjunctival wound by a suture. The after-treatment is similar to that of a simple advancement operation.

It will be noted that this operation produces not simply a lateral displacement of the tendon. As regards the contracted nasal margin of the muscle, it gives the backward displacement of the insertion such as is produced on the muscle as a whole by the ordinary tenotomy. The results to be obtained by this operation may be illustrated by a single case:

Mr. C. P., aged 27, gave the following history: His eyes began to get crossed when he was about 7 years old. At first it was entirely intermittent, but it became more frequent; and when he was 10 or 11 years old it became constant. He was going to school during that time. The strabismus continued slowly to increase until the age of 18 or 20. Since that time he thought there had been no change in it. He had never noticed diplopia.

The amount of squint varied from 80 to 100 centrads (45 to 60 degrees) or fully 10 mm. The inner margin of the cornea was concealed behind the folds at the inner canthus in both eyes at the same time. Either eye was used habitually, the right only to fix objects to the left of the median line, and the left only to fix objects to the right of the median line. The carrying of the object across the median line to the distance of 10 degrees, either way, invariably caused a change of fixation from one eye to the other. Still, by covering the other eye, either could be made to turn out beyond the median line. The vertical movements were fairly executed. There was constant moderate nystagmus. The eye-grounds were good. The correcting lenses and vision obtained with them were: Right eye + 2. ⌒ + 2.25 cyl. ax. 60° = 4/9 partly. Left eye + 1. ⌒ + 2.25 cyl. ax. 120° = 4/12 partly.

Under cocain, with the assistance of Dr. E. W. Stevens, I did the operation above described on the left eye, dividing the nasal two-thirds or three-fourths of each tendon (about 7 mm.) at its insertion. This was followed by notable increase in the freedom of outward rotation. The conjunctival opening was closed by two sutures.

At the end of 30 hours all dressings were discontinued. The convergence remaining amounted to 50 centrads (30 degrees). But there was marked increase in the range of movement for both eyes.

At four days the stitches were removed. They had caused no irritation. The convergence now remaining was 35 centrads (20 degrees). There was marked improvement in the fixation of both eyes, there being now quite a field in which either eye could fix, making it a true alternating strabismus.

On the twenty-sixth day it was possible to obtain binocular diplopia, and with prisms of 36 centrads bases out, the Maddox rod showed equilibrium. At this time the patient used the eye that had been tenotomized, almost to the exclusion of the other; although it had vision of only 4/12 partly and the other had vision of 4/9 partly. This was evidently due to the greater ease with which the left eye was moved. When he was required to fix something requiring his best vision he would by movements of the head bring the right eye into use.

The next day the right eye was operated on in a similar manner, dividing the full two-thirds of the tendons of the superior and inferior recti from the nasal side. The conjunctival stitches were removed on the second day, with over 20 centrads (12 degrees) of convergence still remaining. During the succeeding two weeks the convergence gradually lessened, and at the end of that time the eyes were mostly parallel for distant vision, although they still showed

excess of convergence for near vision. By this time he was able to fix with either eye, and was beginning to show a preference for the right eye, which had the better vision.

The cure seems permanent, but full binocular vision has not been obtained. Although diplopia is readily excited, it seems to give him no annoyance when the visual axes are allowed to deviate inward during near vision.

At the close of the first operation of this kind it was entered in the case record: "The operation was not difficult and not much more painful than an ordinary free tenotomy. It was less serious than an advancement." This was held true equally of subsequent operations. The ensuing reaction and disturbance have not been greater than after the simplest advancement operations. This case was operated on in August, 1899. Five years later the result remained unchanged. In none of the few cases on which the operation has been done has there been any unfavorable result, either at the time of operation or subsequently.

It might be feared that such extensive division would be followed by protrusion of the eyeball. I have seen quite notable protrusion after what seemed to be a badly performed tenotomy, but nothing of the kind after the operation just described.

In September last I operated on Mrs. H. for convergence of 80 centrads and upward, reducing it to 10 or 15 centrads (6 or 8 degrees) by one operation. This included complete tenotomy of the internus, division of the nasal three-fourths of the superior and inferior recti tendons, and advancement of the externus. She was watched from day to day for protrusion of the eyeball; and neither immediately after the operation nor at any subsequent period was there a perceptible increase in the prominence of the operated eye. In every case the total mobility of the eyes has been increased by operation.

The number of cases in which I have advised and performed these operations is small. But I am certain that they constitute a valuable addition to our operative resources for the treatment of strabismus.

DISCUSSION.

DR. G. C. SAVAGE, Nashville, Tenn., considered Dr. Jackson incorrect in his statement that, when a muscle is displaced to the line of attachment of another muscle, the former will perform the function of the latter. Suppose the internus is made to take the place of the externus; when the convergence impulse is sent down, the left eye will turn in and the right will sweep out. Suppose, again, that the right externus is made to take the place of the right internus; the neuricity from the fourth conjugate center will cause the left eye to go toward the right and the right eye to go toward the left. The impulse determines which way the eye will turn.

There are two doors to the house of trouble. The first is labeled "a complete tenotomy." The other is marked "displaced attachment when there was no cyclophoria." Just as certain as one makes a marginal tenontomy, when there is not cyclophoria, the patient and the operator, said Dr. Savage, get into the house of trouble. When a muscle is displaced by advancement, unless there is cyclophoria, surgeon and patient get into trouble. When there is a cyclophoria it is a mistake not to do a marginal tenotomy. Dr. Savage said that in 1890 he pointed out the dangers of advancements, the danger of getting the attachment too high or too low and causing a cyclophoria. He said that the operation which Dr. Jackson described should be done in suitable cases, those cases have cyclophoria or cyclotropia. There are curable cases of squint that can not be cured by simple tenotomy; for these cases have cyclotropia. Until they are measured to determine which part of the tendon to divide and which not, the patient will not get well. There can be no question that in some cases marginal tenotomy is indicated and that in others it is not; some cases in which the weaker muscle may be advanced and its attachment displaced, and in others in which, if that is done, the patient is made a thousandfold worse.

DR. EDWARD JACKSON said that he does comparatively few muscle operations of any kind. The operation described has not been done on patients that possessed binocular vision or who have been capable of developing it. There has been absolutely no trouble from "rotation" of the eye ball. It is possible that this has been avoided by operating on both the superior and inferior muscles at the same time. In the cases alluded to, published in the *Ophthalmic Review*, there was, as part of the paresis of the superior oblique muscle, a distinct tendency to rotation which the operation corrected. Dr. Jackson remarked that the points that he wanted to make were that the internus is not the sole adductor and the externus is not the sole abductor. In cases of high convergent strabismus he believes that the inner portion, the nasal portion of the superior and inferior recti muscles, afford quite as great an obstacle to the proper turning of the eye as the internus itself. He has not only done this operation, but he knows of two instances in which Dr. Stevens of Denver has done it with complete satisfaction. He reported his first case in detail because it has now been six years; and five years after the operation the result was practically the same as shortly after it. He believes that the bad ultimate results from tenotomies, which we still see, are not due to the fact that complete tenotomy is not a proper operation, but to the fact that it is not applied properly, or is applied to cases that should not be subjected to it.

SYMPATHETIC INFLAMMATION FOLLOWING PANOPHTHALMITIS.*

WILLIAM ZENTMAYER, M.D.

PHILADELPHIA.

Until within a comparatively recent period in the history of sympathetic inflammation it had been held that eyes which had been the seat of purulent panophthalmitis did not excite sympathetic inflammation. In 1876, Alt, as a result of original observation and a survey of the literature of the subject, stated that panophthalmitis was among the conditions found in the exciting eye. Notwithstanding this, some authors, among them Fuchs, consider phthisical globes (sequel of panopthalmitis) harmless, and make a distinction between such eyes and atrophied globes (sequel of plastic uveitis).

Knapp states that after panophthalmitis "the eye shrinks, but will remain free from irritation without jeopardizing the integrity of the fellow eye." Treacher Collins says of the inflammation in the exciting eye that it is always of a seroplastic and not of a suppurative type.

Schirmer, in 1900, stated that he had found uveitis purulenta present in only two of twenty-one exciting eyes, and had collected nine instances in 100 exciting eyes. He says that he uses the term "uveitis purulenta" designedly, as the classical picture of panophthalmitis was present only in a minority of the reported cases, whereas the clinical diagnosis had been panophthalmitis. In his own cases the microscopic examination showed that the purulent inflammation was not of the severest type, as the retina and choroid were completely preserved in the posterior segment of the globe and showed changes such as we are accustomed to find in plastic uveitis. He further says that, while he could not assert that sympathetic ophthalmitis can not occur after severe panophthalmitis, it must, in all events, be of extraordinary rarity.

Ruge, as a result of laborious investigations undertaken to determine whether a difference in type exists between exciting and non-exciting idiopathic or traumatic uveitis, asserts the correctness of Schirmer's find-

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

ings and concludes that true purulent panophthalmitis never induces sympathetic ophthalmitis.

In 1904, Ahlström reported a case in which these conditions were associated and takes issue with both Schirmer and Ruge, as he thinks that in every panophthalmitic eye that is not enucleated within a short time of the beginning of the disease there is practically the same picture that these authors saw, and he believes it to be the expression of the termination of purulent panophthalmitis.

I have succeeded in finding the records of fifteen cases of panophthalmitis followed by sympathetic inflammation. In eight of these there is an anatomic description of the eye. In five there is also a report of the microscopic findings. In three the data are insufficient for a critical consideration.

In the first of Schirmer's cases, an insect had flown into the left eye, causing an inflammation which became progressively worse until, when seen by Schirmer two months from onset, panophthalmitis had developed. About three weeks subsequently the eye was enucleated. Eleven weeks later sympathetic inflammation occurred.

In the second case, the eye became inflamed as a complication of measles. Panophthalmitis followed a perforating ulcer of the cornea. Sympathetic inflammation took place four months later. In both cases the choroid and retina were well preserved in the posterior segment of the ball, whereas the iris and ciliary body were highly disorganized. The changes in the choroid were those of a plastic inflammation. It was greatly thickened and contained nests of mononuclear round cells within the stroma and relatively intact capillary walls.

In Gunn's first case, panophthalmitis occurred on the fourth day after the operation of cataract extraction, and sympathetic inflammation followed ten weeks later. The exciting globe was shrunken and there was a slightly vascular cicatrix corresponding to the operation wound. Above this there was a small, round, fleshy swelling in the conjunctiva. Anatomic examination revealed great thickening of the sclerotic and of the uveal structures. The retina was indistinguishable, and the center of the globe was occupied by tough fibrous tissue, in which was imbedded several calcareous particles. The microscopic description is that of a fibrino-plastic inflammation.

In a second case by Gunn, the operation for cataract extraction, one year previously, was followed by late panophthalmitis. The date of the onset of the sympathetic inflammation was unknown. The result of the cataract operation had been bad at the time. The exciting eye was panophthalmitic, with gaping wound through which the iris protruded. Pathologic examination of the excised eye showed great thickening of choroid and iris. A pea-sized cavity, probably formed by the detached retina, was filled with a red fluid containing shreds of a purulent appearance. There were purulent remnants of the vitreous body.

Three cases of suppurating iridocyclitis following cataract extraction, with sympathetic inflammation as a sequel, are reported by Millis. In but one of these is there a reasonable certainty that there was actual panophthalmitis. Sympathetic inflammation occurred seven weeks after the extraction. There are no pathologic data.

Bickerton's case was one of perforating wound in the ciliary region, followed in three days' time by panophthalmitis. Sympathetic inflammation occurred ninety-seven days after the injury, and there were four distinct attacks. The pathologic notes are that there was a small, shrunken stump about the size of a small marble.

In the case reported by Deutschmann (case of Weiland), sepsis and panophthalmitis followed a mastoid operation. There was phthisis bulbi without previous perforation of the globe. Eight months later sympathetic inflammation developed. The cornea and sclera were greatly and to an equal degree thickened. The choroid was atrophied and the ciliary body thickened. The retina was totally detached. The vitreous was dragged forward into the lenticular fossa. Microscopically the cornea was vascular but intact, and there was round-cell infiltration of the lamella. The anterior chamber contained fibrous exudate, mixed with round cells. Round-cell infiltration of the iris and ciliary body was present. There was atrophy of the choroidal body in various stages of degeneration. The folded lens capsule was attached anteriorly to the iris and ciliary body by an infiltrated fibrous tissue composed of the vitreous. The retina was attached, in part, to the vitreous mass by fibrous bands. The choroid was infiltrated by round cells. *Staphylococcus pyogenes* was present.

Scheffel's case resembled the above case. Following choroiditis metastatica postmeningitidem, the globe became shrunken one half. Scheffel states that, owing to the accepted view that, after panophthalmitis, sympathetic inflammation is scarcely to be feared, enucleation was not performed. Sympathetic ophthalmitis occurred two months from the onset of the inflammation.

In Ahlström's case there was an infected traumatic ulcer of the cornea. This was cauterized and a punctiform paracentesis performed. There resulted an adherent leucoma, possibly of a fistulous type. There was bilateral dacryocystitis, for which the sacs were enucleated. The eye did well for four months, when it became inflamed. When Ahlström again saw it there was a subsiding panophthalmitis, with two scleral perforations. The excised ball measured 18x19 mm. and its form was well retained. The inner coats of the eye were almost completely destroyed. There were remnants of the ciliary body and of the choroid. The latter for a short distance above the nerve head. A granulation polyp extended from the purulent vitreous to the perforation in the sclera, through which it projected. Microscopically the picture was one of a purulent destruction of the intraocular tunics. Numerous colonies of cocci, presumably staphylococci, were found in the vitreous abscess and in the choroid.

In 1876 Alt tabulated the anatomic findings in 110 cases in which sympathetic inflammation or sympathetic irritation had been excited, and in his conclusions states that purulent panophthalmitis was found to be an exciting cause, and further states that, in thirteen instances of panophthalmitis purulenta, iridochoroiditis was induced in the sympathizing eye. From a careful examination of the abstracts given in this exhaustive résumé, and where possible of the original records, it was found that of these thirteen instances in all but two (Justi and Packer) the inflammation was described as either of a plastic or a purulent type, or there were changes present which result from plastic inflammation.

In the oft-cited case of Lawson, the globe was shrunken one-third, the greater part of the cornea was occupied by a cicatrix. T.— =2. Sympathetic ophthalmia followed the wearing of an artificial eye. This

V 45
1905

was probably the remains of an eye once the seat of a mixed type of inflammation.

In Craig's case there was a history of a panophthalmitis five years previously, following a perforating ulcer of the cornea. The globe was phthisical. Vision in the fellow eye had been failing for one year. There was slight ciliary injection. Total posterior synechia; shallow anterior chamber and T=+1. The nerve was atrophic and showed pathologic cupping. Iridectomy was done. Two weeks later the eye was quiet and tension normal. From the symptoms and behavior of the eye under iridectomy this may be considered a doubtful case of sympathetic inflammation.

My own case is as follows:

M. K., aged 70, was first seen at St. Mary's Hospital on April 1, 1902, when an examination showed in the right eye an immature cataract in an otherwise apparently healthy eye. In the left eye there was an incipient cataract. The fundus showed no gross changes. The patient returned in September, 1904, with a mature cataract. The candle field was good. The patient was frail and poorly nourished. There was neither albumin nor sugar in the urine. The cataract was extracted October 1. An upward section with a small conjunctival flap was made with difficulty, owing to the globe being deep set. The lens could not be made to present and was removed by the wire loop. The eye was examined at the end of twenty-four hours, at which time there was undue corneal haze. On the sixth day the cornea had cleared except for the persistence of a striated keratitis. When again seen by me on the eighth day the cornea wound was infiltrated with pus. The lips of the wound were thoroughly cauterized with the actual cautery, and iced compresses and iodoform were used. These measures having failed to arrest the suppurative process by the end of forty-eight hours, all the involved tissues were again cauterized. Notwithstanding this panophthalmitis followed with only moderate proptosis and edema of the lids. Enucleation was again and again advised but refused, and after an eight week's stay in the hospital she was discharged with a shrunken, tender globe.

December 8 she returned to the hospital, stating that for the past five days the fellow eye had been annoying her, and that the sight had been growing dim. There was a marked uveitis with exudate in the pupillary space and adhesions of the iris to the capsule of the lens along the lower pupillary margin. She absolutely refused to have the shrunken ball removed or to have the inflamed eye treated. She was not seen again for one week's time, when she presented herself at my service at the Wills Eye Hospital, willing this time to submit to enucleation. The sympathizing eye was markedly congested, the pupil small and vision reduced to finger counting. The shrunken globe was at once enucleated and active measures instituted to control the inflammation in the left eye. Inunctions of mercury and salicylate of soda, after the method of Gifford, with milk punches, were employed. After three weeks of this treatment some improvement was noted, but the patient failed rapidly in strength and was very much depressed mentally. Relapses in the condition of the eye occurred and in the early part of January she suddenly became blind. She was removed from the hospital a few days later and died two weeks subsequently.

The pathologic study was made by Dr. Edward A. Shumway, whose report follows:

"The eyeball is in a state of well advanced phthisis bulbi, its antero-posterior diameter (in section) measuring only 16 mm. and its transverse diameter 20 mm. The globe is distorted and sclera thickened, and the cornea flattened. The lens is absent and the entire eyeball is filled with cellular exudate.

"Microscopically: The cornea is almost entirely replaced by connective tissue, which contains many blood vessels and much round cell infiltration. The surface epithelium is thickened and irregular, sending inshots of cells into the tissue beneath, and in places is absent over a considerable area. There has been a perforation at the center, and Descemet's membrane is curled up back of the cornea. There is no trace of the lens except for the capsule, which is imbedded in a thick mass of organizing exudate, which presses up against the posterior surface of the cornea. The iris and ciliary bodies are entirely destroyed and can be recognized only by the clumped masses of pigment with which the cellular mass is infiltrated which fills up the interior of the eyeball, and is being converted into organized tissue. To some extent this mass is composed of pus cells. These are particularly prominent on one side in the neighborhood of the ciliary body, and from here a purulent collection surrounds and infiltrates the processes. Elsewhere and in the position of the choroid, the inflammation has more of a plastic character, the cells being mononuclear in type; with them are many endothelial cells, and in certain localities, especially in the posterior half of the eyeball, a great many giant cells (Fig. 1). In the tissue there is no evidence of caseation and hence the process is not to be considered tubercular. These giant cells have been long known and well described, especially by Krause, Axenfeld, Schirmer and others. The cellular mass representing the choroid is separated from the sclera, as the result of the shrinking of the tissue in the interior of the eyeball, and the space thus left is filled with a moderately cellular exudate which is also being organized, and contains numerous fine capillaries. The retina is almost completely destroyed, only traces of it remaining. The vitreous is

Fig. 1.—Giant cells occurring principally in posterior segment of eyeball.

occupied also by an exudate which contains comparatively few cells but a large amount of fresh blood. It shows also well advanced organization, fine connective tissue processes running in every direction, accompanying newly formed capillaries. The older blood vessels throughout the eyeball show marked changes; their walls are thickened, the cells of the intima are proliferated, and many of the vessels in the choroid are completely obliterated. The ciliary nerves in the thickened sclera are surrounded by dense mantles of round cells, but outside of the sclera they do not show the condition to as marked a degree. The optic nerve is moderately infiltrated, but the chief excess of cells is in the intervaginal space, especially at their blind extremities within the sclera. Here there is a pronounced proliferation of the endothelial cells, and also many infiltrating round cells.

"The examination, therefore, shows that the contents of the eyeball has been destroyed by a purulent inflammation (panophthalmitis), which has evidently spread from the anterior segment, from the perforated cornea, and has been succeeded by a plastic form of inflammation, with the production of many giant cells, and the proliferation of the endothelial cells of the tissue. This tissue is now going on to the formation of connective tissue, which is causing shrinking and distortion of the eyeball.

"There is a moderate neuritis, but a more marked perineuritis, and an infiltration of the ciliary nerves. This description is very like the usual findings in eyeballs which have been removed on account of sympathetic inflammation, and supports the view of Schirmer, that in cases of panophthalmitis which have caused sympathetic inflammation there is probably a mixed infection and a combination of plastic with the purulent inflammation."

I am indebted to Dr. Harold G. Goldberg, curator and pathologist to Wills Hospital, for the preparation of the specimens for microscopic study.

I believe that in some of these cases, i. e., Gunn's second case and Ahlström's case, where the original insult to the eye had been of the nature recognized as being prone to excite sympathetic inflammation and where the usual period of incubation had elapsed, it may safely be questioned whether the panophthalmitis should be held accountable. The absence of microscopic study in many of these cases makes it impossible to determine whether the cases were true instances of purulent panophthalmitis.

The microscopic findings in Schirmer's cases lead him to believe that in panophthalmitic eyes which excite sympathetic inflammation there is a mixed infection; that, besides the pus exciters, the bacteria of chronic fibrinous uveitis entered, survived, further developed, and then migrated to the other eye.

Ruge states that these cases present the evidence of a fibrinoplastic uveitis analogous to the findings in other exciting eyes, and that this chronic inflammation was the cause of the sympathetic inflammation.

Ahlström is not prepared to accept this explanation, as he believes that these changes are an expression of the termination of a purulent inflammation and is of the opinion that so long as our search for a specific microörganism of sympathetic ophthalmia is not crowned with success this question must remain unsettled.

Several theories have been advanced to explain the extreme rarity with which panophthalmitis and sympathetic inflammation are associated. The earliest was that of Leber and Deutschmann, who reasoned that the microörganisms were, in part, extruded with the pus when the globe perforates, and in a measure rendered harmless by the large quantities of pus. Gifford found in experimentally produced panophthalmitis, blocking of the lymphatics as the result of inflammation, and considered that this offered a mechanical obstruction to the migration of the organisms.

Schirmer's explanation is that it is due to the fact that panophthalmitic eyes contain only the microörganisms of suppuration, and that these are incapable of migration, and that where the mixed infection does occur the exciters of pus, being the more virulent, overcome and destroy the other organisms.

CONCLUSIONS.

1. While the occurrence is one of extreme rarity, eyes that present the clinical picture of panophthalmitis may excite sympathetic inflammation.

2. Such eyes, however, usually present microscopic changes analogous to those found in other exciting eyes.

3. With few exceptions in the cases in literature of sympathetic inflammation following phthisis bulbi, the eyes were of the class described by Fuchs as atrophied eyes.

4. Usually it is, clinically, the mild form of purulent uveitis which excites.

5. It is only after panophthalmitis of a virulent type that the resultant shrunken globe should be considered harmless.

6. Where from the nature of the infection the panophthalmitis has been of a low grade, or where as a result of treatment the inflammation has not assumed a virulent type, the eye should be considered a dangerous one and should be enucleated.

7. That in some cases where the purulent panophthalmitis has been considered the exciting cause the original injury or disease may have been responsible.

8. Whether the histologic findings in most panophthalmitic eyes are to be considered the terminal stage of the inflammation or the evidence of a mixed infection is still undecided, but the evidence points strongly to the correctness of the latter assumption.

9. Several factors contribute to render panophthalmitic eyes innoxious. When the globe perforates many of the microörganisms are extruded along with the pus, those retained within the globe becoming inactive through the enormous pus formation. This active pyogenesis, by blocking the posterior lymph spaces, serves to prevent migration of the toxic agents. Finally, the panophthalmitis may have been excited by organisms probably incapable of inducing sympathetic inflammation, such as staphylococci, streptococci and pneumococci.

DISCUSSION.

DR. E. V. L. BROWN, Chicago, said that Dr. Zentmayer did not make clear the significance of the giant cells; they are not supposed to have any relation to tuberculosis in sympathetic ophthalmia.

DR. J. HIRSCHBERG, Berlin, said that the giant cells are to be found in almost every clear case in which one eye has been perforated and there is sympathetic ophthalmia in the other. The nature of sympathetic ophtalmia is not known, but if we carefully examine the anatomic condition of the exciting eye we find a great similarity to tuberculosis, though not being tuberculosis; and if we carefully examine the ophthalmoscopic condition of the sympathized eye we find a very close resemblance to the syphilitic appearance, but it is not syphilitic.

DR. WILLIAM ZENTMAYER read Dr. Shumway's conclusions to show that the report speaks of the fact that the giant cells could not have been tuberculous because of other microscopic conditions associated with tuberculosis. As to Professor Hirschberg's remarks on the early signs of sympathetic trouble, Dr. Zentmayer said that they could not be determined in this case because the patient remained away from the hospital until an ophthalmoscopic examination was impossible.

ANAEROBIC CELLULITIS.*

J. CLARK STEWART, M.D.
Professor of Principles of Surgery University of Minnesota.
MINNEAPOLIS.

The various septic processes associated with the formation of gas in the tissues have always been of the greatest interest to surgeons, both on account of their comparative rarity and of the certainty and horrible rapidity with which, when untreated, they terminate life.

These morbid processes were observed and studied by even the oldest medical authors as Hippocrates and Ambrose Paré, but little was done toward the elucidation of their etiology or even the careful study of their symptomatology until the middle of the nineteenth century, when the French authors Chassaignac, Maisonneuve, Velpeau, and finally Salleron,[1] gave masterly de-

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-sixth Annual Session, July, 1905.

1. Arch. de Medic Milit, 1858, vol. xxi, p. 300.

scriptions, the latter's based on sixty-five cases observed during the Crimean War.

Following this a certain amount of bacteriologic research was attempted, but nothing definite was accomplished until Pasteur,[2] in 1877, published his work, in which he described the *vibrion septique* and showed its relation to certain forms of septicemia in animals.

Next, in 1883, Trifaud[3] demonstrated a similar organism in some cases of fulminating gaseous gangrene, and in 1885 Chauveau and Arloing[4] established the identity of this germ with the *vibrion septique* of Pasteur.

Although Pasteur's *vibrion septique* has been shown to have been in all probability an impure culture of the bacillus of malignant edema, the majority of modern French authors still ascribe cases of gas infection to this germ, although A. Ricard[5] admits that other bacteria may cause the same clinical picture.

It remained for an American, William Welch, in 1891, to isolate the now generally accepted cause of gas infection, the *Bacillus aerogenes capsulatus*, or *Bacillus welchii* as it has been named in his honor. In 1892 Welch and Nuttall[6] reported a case in which Welch's bacillus was isolated from the body of a man dying from the rupture of an aortic aneurism.

E. Fraenkel[7] seems to have independently described the same bacillus and demonstrated its causal relation to gaseous septicemia.

In August, 1893, the first American case corresponding to the description of the French authors was reported by Graham, Steward and Baldwin,[8] in which, after an abortion, fatal emphysematous septicemia occurred, and the *Bacillus aerogenes capsulatus* was recovered in pure cultures from the blood after death.

In a later article by Welch and Flexner[9] twenty-three cases of various forms of infection by the gas bacillus were detailed, and since this time a rapidly increasing series of cases have been reported by various observers, quite a number of which have terminated in recovery under appropriate surgical treatment.

Bloodgood[10] gave a résumé of cases reported up to that date, omitting puerperal cases. From fourteen published cases and eight unpublished from Dr. Halsted's service at John's Hopkins he draws valuable conclusions as to diagnosis and treatment. Welch,[11] in a most complete article on morbid conditions caused by the *Bacillus aerogenes capsulatus*, discusses forty-six cases of gaseous cellulitis. Bloodgood[12] adds seven cases to those discussed in 1899.

To this list I am able to add six cases from literature and two from personal experience, making a total of sixty-one cases, not more than three of which can be questioned either as not being cellulitis, or because the bacteriologic findings are not sufficiently accurate.

I present here the cases which include all that I have been able to find in the literature at my command: Mann, [13] 1 case; Welch and Flexner,[9] 6; Martin, [14] 1; Bloodgood,[10] 6; Welch reports 2 cases of his own, unpublished, 1 unpublished of Flexner, and 3 unpublished of Carroll; E. Fraenkel,[7] 4; Passow,[15] 1; Dunham,[16] 5; Ferguson,[17] 1; Erdmann,[18] 1; Le Boutillier,[19] 1; Love and Cary,[20] 1; Norris,[21] 1; Hitschmann and Lindenthal,[22] 5; Thorndike,[23], 2; Muscatello,[24] 3; Guillemot,[25] 1; W. Southey Wright,[26] 1; Gildersleeve,[27] 1; B. F. Curtis,[28] 1; J. B. Roberts,[29] 1; George Heaton,[30] 1; L. M. Loeb,[31] 1; Jacobson,[32] 1; Cole,[33] 1; Gould,[34] 1; Rizzo,[35] 1; Sappington,[36] 2; Mann 1, quoted by Welch and Flexner,[9] p. 20 (not included in their 6).

CASE 1.—Capt. W., aged 71, of Wayzata, Minn., came under my care March 16, 1903, for retention of urine due to stricture aggravated by exposure to cold.

History.—Before reaching Minneapolis, he had been relieved by the suprapubic aspiration of forty ounces of bloody urine. Perineal section was done and bladder drained. At the same time a small region of urinary extravasation around the suprapubic puncture was incised. In spite of this early incision an extensive spreading cellulitis of the abdominal wall was set up, which proved obstinate to the treatment instituted, of free incision and hot antiseptic packs. On the sixth day, a marked extension of the abdominal process toward the right side was noticed, and for the first time crepitation of the swollen tissues was observed. An incision was made five inches beyond the former ones, and a peculiar gelatinous condition of the subcutaneous tissues found, there being also considerable fluid and many bubbles of gas.

Bacteriologic Examination.—Cultures were taken at this time and site, which showed *Bacillus aerogenes capsulatus* in pure culture, while those from the older lesions showed also staphylococci.

Treatment.—Extensive parallel incisions were made through the whole swollen area and about two inches beyond in all directions down to the muscles. This striping was about two inches apart, and reached from the ninth rib above to below the line of the iliac crests below, and extended from the axillary line on the left to the backbone on the right. All these strips were separated as far as possible from underlying tissues, freely irrigated with H_2O_2 isolated by wet gauze strips and the whole covered by hot, wet, sterilized dressings.

Result.—Under this treatment, the septic process made no further progress, the sloughs gradually separated, leaving nothing between the bared muscles and the skin; and within six weeks the patient was practically well.

Remarks.—It may be of interest to note that there was no marked change in the patient's condition synchronous with the onset of the gas infection. His general condition at that time was extremely bad, with low delirium and a running pulse, while his temperature did not vary much from the 100 degree mark. The crepitation of the tissues at a point far distant from the extravasation cellulitis was the only diagnostic point. Apparently the gas infection began some

2. Charbon et Septicemie. Bull. de l'Acad. de Méd., 17 jul. 1877.
3. Rev. de Chir., 1883, p. 778.
4. Bull. l'Acad. de med., 1885, p. 604.
5. Traite de Chir. le Dentu and Delbet. 1896.
6. Welch and Nuttall: Bull. Johns Hopkins Hosp., 1892, No. 3, p. 81.
7. E. Fraenkel: Centralb. f. Bakter, 1893, xiii, p. 13; Ueber gas phlegmon, 1893, Hamburg and Leipzig.
8. Graham, Steward and Baldwin: Columbus Med. Jour., 1893, xii, p. 55.
9. Welch and Flexner: Jour. Exp. Med., 1896, i, p. 5.
10. Bloodgood: Progressive Medicine, December, 1899, iv, p. 158.
11. Welch: Johns Hopkins Bull., September, 1900, p. 185.
12. Progressive Medicine, 1901.
13. A. H. Mann, Jr.: Ann. of Surg., 1894, xix, p. 187.
14. Martin: University Bulletin, 1896, No. 3.
15. Passow: Charité Ann., 1895, xx, p. 275.
16. Dunham: Bull. Johns Hopkins Hosp., 1897, viii, p. 68.
17. Ferguson: Trans. Ind. Med. Soc., 1897, p. 339.
18. Erdmann: Med. Record, Feb. 5, 1898.
19. Le Boutellier: Med. Record, March 5, 1898.
20. Love and Cary: Med. Record, April 9, 1899.
21. Norris: Am. Jour. Med. Sci., February, 1899, p. 172.
22. Hitschmann and Lindenthal: Sitzungbd d. k. Acad. d. Wiss. Mathch., 1898, cviii, No. 5, p. 67.
23. Thorndike: Boston Med. and Surg. Jour., June 7, 1900. p. 592.
24. Muscatello: Riforma Med., 1900, ii, p. 508-530.
25. Guillemot: Compte rend. Soc. de Biol., 1898, x, p. 1017.
26. Wright, W. S.: Lancet, Aug. 13, 1898.
27. Gildersleeve: Med. Record, March 4, 1899.
28. Curtis, B. F.: Ann. of Surgery, October, 1900.
29. Roberts, J. B.: Ann. of Surgery, October, 1900.
30. Heaton: Lancet, 1899, i, p. 894.
31. Loeb: Am. Med., July 27, 1901.
32. Jacobson: Am. Med. Compend., Toledo, October, 1901, xvii, p. 603.
33. Cole: Bull. Johns Hopkins Hosp., 1902, xiii., p. 234.
34. Gould: Annals of Surgery, October, 1903.
35. Rizzo: Arch. Internat. de Chir., 1903, No. 2.
36. Sappington: New York Med. Jour., 1904, p. 641.

days after the urinary extravasation and operation, as no gas was seen until the eighth day of disease, or the sixth day after the urethrotomy. The seat of gas cellulitis was quite distant from the urinary extravasation, and the gas bacillus was found there in pure culture, although the suprapubic cellulitis was undoubtedly an ordinary pus infection. The process certainly did not begin in the perineal urethrotomy wound, as this remained healthy throughout without swelling or sloughing.

Bacteriologic Report.—Cultures were made by Dr. S. M. White of the University of Minnesota, Pathological Department, with the following results: "Anaërobic cultures yield a short, thick bacillus, often with square ends, usually single, occasionally growing out into short chains, non-motile, retains stains by Gram, and stains by ordinary basic dyes. It does not form spores, at least not under ordinary conditions. It forms a heavy granular deposit in glucose broth within 24 hours, and grows in small round colonies in glucose agar shake preparations. Gas formed in one instance in glucose agar. Inoculated intravenously into rabbits which are then killed after 30 minutes and incubated 24 hours, an abundant formation of gas takes place, especially in the liver. Fifteen c.c. broth culture did not kill rabbits. No other bacteria are present in the cultures from new incisions. From older areas the gas bacillus was found mixed with staphylococci.

CASE 2.—Mr. W., Jew, married, aged 27.

History.—While on duty as private watchman he was shot December 11, 1904, at 2 a. m., receiving a pistol wound in the left thigh. He was brought to the City Hospital at once, and the house surgeon thoroughly cleansed the wound and applied an antiseptic dressing. The patient rested well during the night, and when I first saw him on rounds in the morning he presented no disturbance of any sort. The first dressing was, therefore, left in place and the wound was not disturbed until the next morning, about 30 hours after the injury. At that time, he showed a rise of temperature to 100.5, with a pulse about 90, much restlessness and anxiety. He also stated that he had been unable to sleep during the night on account of pain about his wound. He was taken to the dressing room and the wound was examined. There was found a bullet wound about one inch below the center of Poupart's ligament, around which there was some slight swelling and dusky redness. A large sterile bullet probe was introduced and a few bubbles of gas escaped from the deeper part of the wound. He was at once ordered to the operating room, but as another operation was in progress, a delay of about two hours was necessary. During this time some of his friends removed him to a private hospital, where he passed into the hands of another surgeon, who later in the day operated, making simply a counter opening for drainage and removal of the bullet; there was no attempt at free incisions through the infiltrated area. After operation his temperature was 101 degrees, pulse 90, respiration 28, and he complained of thirst, severe pain in his hip and thigh, and was apparently unable to sleep. He was very pale and weak, too weak to be restless. On December 13, his condition became gradually worse. He became weaker, dying on December 15 at 2 a. m., seemingly in a state of profound toxemia.

Appearance of Body.—For an area of four inches around the wound of entrance the skin was brawny red, congested and tense, and from about five inches above Poupart's ligament all along down the leg and to the toes the subcutaneous tissue became emphysematous, gas being distinctly palpable, but there was no discoloration of the skin. From the incisions for drainage came a bloody serous discharge and much gas of a foul cooked blood and hydrogen disulphid odor. Streptococci were found in fresh smears and also an unknown bacillus.

Autopsy.—From the records of the Pathological Laboratory of the University of Minnesota, by the courtesy of Professor F. F. Wesbrook.

No postmortem was permitted, but we were allowed to obtain material for bacteriologic examination. The left leg was considerably swollen and emphysematous throughout, this emphysema extending for a distance of about three inches above Poupart's ligament. There were three openings. The first was situated on the anterior aspect of the limb about one inch below the center of Poupart's ligament, and was somewhat irregular, evidently the wound of entrance. The second was situated immediately over the region of the great trochanter. The third was situated on the outer surface of the thigh about the junction of the middle and lower thirds. The two latter were apparently for drainage. From all three, a serous fluid with bubbles of gas could be expressed. Fluid for bacteriologic examination was taken from three sources: (1) the wound of entrance; (2) the lower drainage opening; (3) an opening made in the anterior surface of the thigh about the center of the middle line.

Bacteriologic Findings.—(Material obtained nine hours after death.) Direct smears gave the following results:

1. From the wound of entrance a mixture of streptococci and a large bacillus, roundish ends, apparently with a capsule was taken.

2. From the lower drainage wound and opening made in anterior surface of thigh a pure culture of a bacillus resembling morphologically that found in wound of entrance was isolated.

Cultures.—Sowings were made into glucose broth, on glucose agar, blood serum and litmus lactose agar. These were grown both aërobically and anaërobically. These grown aërobically gave an apparently pure culture of streptococcus pyogenes from wound of entrance. Inoculations from the other two sources showed no growth. These grown anaërobically showed a spore-bearing bacillus easily stained with simple anilin dyes and retaining the stain by Gram's. The organisms resemble to a certain extent *B. anthracis*, but are somewhat stouter and are more variable in length. Some appear as diplococci, others are chains of various lengths, as many as fifteen elements being observed in one chain. The ends are roundish, but in the chains they are more or less square. They produce a diffuse cloudiness with a slight sediment in broth. On slant agar, the colonies are difficult to describe, being scarcely visible to the naked eye. Glucose agar is fermented, the amount of gas being apparently great. Litmus lactose agar is also fermented and with an acid reaction. The organism killed a guinea pig in forty-eight hours. Two rabbits, animal experiments Nos 318 and 358, showed apparently no effect. A rabbit, animal experiment No. 357, inoculated intravenously and killed within five minutes, after being placed in incubator for eighteen hours, was greatly distended. Postmortem showed gas bubbles abundant in the subcutaneous tissue and muscles of the belly wall. The same phenomena were observed in the liver, spleen, kidney and heart wall, but were most pronounced in the liver. Smears from each of these organs and from the heart's blood showed the organism above described in great abundance. In smears of the heart's blood, capsules were demonstrable. Inoculations into sugar media with heart's blood gave the same results as those obtained from original material.

Bacteriologic Diagnosis.—B. aerogenes capsulatus (Welch).

Quoting largely from Welch and Bloodgood, and adding the eight new cases, the points of interest can be summarized as follows: The sex of the patients shows the usual preponderance of males in all diseases largely dependent on traumatism; 48 males to 11 females, with sex not given in two cases. In over 80 per cent. one of the extremities was the seat of the disease, and in all but seven, traumatism or surgery preceded the onset of the disease. The 61 injuries are itemized thus:

Compound fractures	23
Bullet and shot wounds	7
Infusion of salt solution	3
Hypodermic injections	2
Ligation of artery for aneurism	4
External urethrotomy	3
Submaxillary abscess	2
Traumatic rupture of rectum	1
Appendectomy	1

V 45
1905

Prostatic abscess	1
Herniotomy	1
Nephrectomy	1
Severe lacerated wounds	2
Spontaneous gas gangrene	4
Spontaneous general emphysema	2
After erysipelas	1
Unexplained	3

The mortality in the 61 cases was a little over 55 per cent. Of 18 compound fractures 8 patients died and 10 recovered after amputation. Of 7 bullet and shot wounds 4 patients died and 3 recovered with and 2 without amputation. Of 3 patients after external urethrotomy 2 died and 1 recovered. This corresponds closely to the general mortality of the whole 61 cases and excluding several of Welch's patients dying of pus infection and tetanus after apparent recovery from gas infection, the average death rate in surgical cases would seem to be about 50 per cent.

ETIOLOGY.

In regard to the etiology of gas infection, Welch has shown that the bacillus is very widely distributed in nature, being especially common in soil, hospital dust and intestinal contents, hence its more frequent occurrence in compound fractures, dirty wounds and operations about the gut and perineum. Its occurrence after operations on the urinary tract, such as urethrotomy and nephrectomy, must be explained as due to accidental contamination by gut contents as the bacillus has not as yet been found in the urine before death. Welch and Bloodgood, however, both seem to favor the probability of the bacteria being carried to the seat of infection in some cases by the blood, as Gwyn[37] has demonstrated their presence in the blood of the living patient.

According to Welch, it is extremely improbable that clinical gas infection is due to other germs than the *Bacillus aerogenes capsulatus*. The bacillus of malignant edema has been reported as causing fatal infection in man, but without gas production. A few cases have been ascribed to the colon bacillus, as case reported by Rizzo,[35] and to the *Bacillus proteus;* but the reports do not show that either anaërobic methods of culture or the inoculation of animals were attempted, so the proof of diagnosis is insufficient, especially in view of Lanier's work. The latter has demonstrated an aërobic form of the gas bacillus which closely resembles the colon bacillus and might be easily mistaken for it.

Certain German workers have made extensive studies which tend to show that the gas bacillus is at least closely related to the bacillus of butyric acid fermentation, so it is probable that the last word has not been spoken in regard to the bacteriology of this class of diseases.

SYMPTOMATOLOGY.

Not much has been added to the descriptions of the older authors, of whom Maissonneuve and Pirogoff give especially full details. The latter,[38] in 1864, described two varieties of gaseous gangrene: First, cases in which gas forms within forty-eight hours and the tissues become gangrenous and melt away without local inflammatory reaction, while the patient becomes early collapsed, anxious, sweating and dies within a few days; and, second, cases in which the local reaction is marked, the course of the disease slower, and in which there is marked fever and the other ordinary symptoms of severe infection. The symptoms noted in the cases listed above have been quite varied and, on the whole, have not been striking, the one constant and diagnostic sign having been the presence of gas in the tissues or in the wound secretions, occurring from the eighth hour to the sixth day. Other symptoms noted have been rarely a chill, regularly a fever ranging from 100 to 104 degrees in the different cases, rapid running pulse, delirium in many cases; locally gas in the tissues surrounding the point of entrance, gas in wound secretions, fetid or stinking odor to discharge and incised tissues, frothy, brownish discharge of horrible odor, dusky redness of the skin followed in some cases by the ordinary color changes of gangrene; general emphysema of extensive areas, sometimes of whole body, explosive escape of gas from tissues when incised, and immense production of gas in all parts of the cadaver after death.

There seems to be much difference of opinion as to whether pure infection by the gas bacillus is more malignant than a mixed infection. Muscatello[24] and Gangitano believe that the mixed infections are the most virulent, and even claim that the gas bacillus is unable to exert any pathologic action on healthy tissues; while Hitschmann and Lindenthal take exactly the opposite view, stating that the pure infections are most virulent; and Welch, while admitting extreme virulence in certain cases of mixed as well as in pure infections, positively contradicts, from experimental experience, the statement that the gas bacillus can not attack healthy tissues. A study of some of the recent cases would suggest that, like tetanus, the relative virulence of this disease in any given case may be indicated by its early development, that is, that cases developing gas symptoms slowly should give the better prognosis.

DIAGNOSIS.

The one diagnostic sign is the presence of gas in the tissues and the presence of the bacillus in smear preparations from the wound, in fact, the latter should be given precedence, as one or two observations establish the fact that this germ may live for some time in a wound without producing gas.

All suspected wounds, therefore, should be subjected to this amount at least of bacteriologic study.

TREATMENT.

All contaminated wounds should be thoroughly cleansed and disinfected, best by carbolic acid, followed by alcohol; although this did not prevent gas infection in one case reported by Bloodgood. As soon as diagnosis is made, by microscope or clinically, the seat of infection should be laid widely open by multiple incisions, and then treated by continuous bath or by irrigation, hydrogen peroxid and wet dressings. When the lesion is confined to an extremity, the consensus of opinion seems to favor early amputation, although the results of conservative treatment seem to indicate that many limbs may be saved by its adoption. The recovery in my case of gas cellulitis in a not robust man of 71, the treatment being merely the very thorough carrying out of the ordinary treatment of any diffuse cellulitis, would suggest that the rather difficult treatment by continuous bath advocated by Blodgood may be dispensed with in some cases. How much the use of H_2O_2 can prevent the growth of an anaërobic bacterium is a matter for speculation; theoretically, it would be indicated locally in this disease, as in tetanus.

CONCLUSIONS.

1. Gas bacillus infection, while not a common disease, demands the attention of all surgeons because, while regularly fatal when untreated, its early diagnosis is

37. Bull. Johns Hopkins Hospital, 1889, p. 134.
38. Pirogoff: Grundzuege de allgem. Kriegschirurgie, p. 867-1866. Leipzig.

easy and its successful treatment requires only the prompt and thorough application of well-established surgical principles.

2. Either removal of entire disease by amputation or thorough exposure of its site to air and drainage seem the essentials to be attained.

3. Free incisions, the continuous bath, or irrigation and wet dressings, have afforded the best results, and theoretically hydrogen peroxid is indicated.

BIBLIOGRAPHY.

Maisonneuve: Gaz. med. de Paris, 1853, p. 592.
Bottini: Gior. d. r. Acad. di med. di Torino, 1871, No. 3, s, p. 1121 and 1138.
Gussenbauer: Deutsche Chirurgie Lief. 4 Stuttgart, 1882.
Brieger and Ehrlich: Berliner klin. Wochft., 1882, xix, p. 661.
Bucquet: Thèse Paris, 1883.
Chaveau and Arloing: Bull. l'Acad. de med., 1884, 2, xiii, p. 604.
Rosenbach: Die micro-organ. bei wund infection, Wiesbaden, 1884.
Koch, W.: Deutsche Chirurgie Lief, 9 Stuttgart, 1886.
Dalton: The Journal A. M. A., September, 1887.
Dalton and Bremer: Am. Jour. Med. Sci., 1888, xcv, p. 594.
Verneuil: Semaine Med., 1890, p. 403.
Ernst, P.: Virchow's Arch., cxxxiii, 1893, p. 308.
Chiari: Prager med. Wochft., 1893, xviii, 1, p. 1.
Gebhard: Zeitsch. f. Geb. u Gynäk., 1893, xxvi, p. 480.
Welch, W. H.: Surgical Bacteriology, 1894, Dennis' System.
Novy: Zeits. f. Hygiene, 1894, xvii, p. 209.
Goebel, Carl: Centralbl. f. allgem. Path., July 1895, vi, p. 465.
Dscon: Annales de l'Inst. Pasteur, 1895, ix, p. 179.
Kedrowski: Zeitsch f. Hygien, 1895, xx, p. 358.
Menereul: Annales de l'Inst. Pasteur, 1895, ix, 7, p. 529.
Hinse: Münch. med. Wochft., 1895, xliii, p. 209.
Goebel, Carl: Jahr. b. d. Hamburgischen Staata, 1896, iv.
Williams, H. U.: Bull. Johns Hopkins Hosp., 1896, vii, p. 66.
Adami: Montreal Med. Jour., August, 1896.
Jamieson: Montreal Med. Jour., August, 1896.
Leech: Quart. Med. Jour. (Sheffield), 1896, v, p. 237.
Wendeler: Monatsch. f. Geb. u Gynäk., 1896, iv, p. 581.
Hamilton and Yates: Montreal Med. Jour., August, 1897.
Levy: Arch. f. exp. path. u. phar., 1895, xxxv, p. 335.
Erdmann, I.: Med. News, Oct. 9, 1897.
Dobbin: Monst. f. Geb. u. Gynäk., 1897, vi, p. 375.
Dobbin: Monst. f. Geb. u. Gynak., 1897, vi, p. 375.
Kronig and Menge: Bact. des genital-kanales, 1897; Semaine Med.,
Lindenthal: Wien Med. Wochft., 1897, p. 3-35.
Veillon et Zuber: Soc. de Biol., March 6, 1897; Semaine Med., 1897, p. 85.
Perkins: Boston Med. and Surg. Jour., 1897, cxxxvi, p. 154.
Achalme: Ann. de l'Institut. Pasteur, 1897, xi, p. 854.
Nicholls: Brit. Med. Jour., 1897, ii, p. 1844.
Norris: Med. Record, 1898, p. 351.
Brooks: Med. Record, March 5, 1898.
Buday: Central f. bacter. u. parasit Jena, 1898, xxiv, p. 369.
Lindenthal: Monatsch. f. Geb. u. Gynäk., 1898, vii, p. 269.
Veillon et Zuber: Arch. de Med. Experiment, 1898, x, p. 517.
Cesaris-Demel: Gior. d. R. Accad. di Med. di Torino, lxi, p. 256; lxii, p. 190.
Gerker: Ueber gas phlegmon. Inaug. Dis., 1898, Halle.
Pruts: Deutsche Zeits. f. Chir., 1898, xlvii, p. 591.
Dobbin: Am. Jour. Obst., 1898, xxxviii, p. 185.
Dischler: Arch. f. Gynäk., 1898, lvi, p. 190.
Kelly and MacCallum: The Journal A. M. A., 1898, xxxi, p. 376.
Kedrowski: Centralbl. f. allgem. Path., etc., 1898, ix, p. 817.
Larkin: Med. Record, 1898, liii, p. 354.
Rist: Thèse Paris, 1898.
May and Gebhard: Deutsche Arch. f. klin. Med., 1898, lxi, p. 323.
Lauterel: Thèse Paris, 1898.
Doleris: Semaine Med., 1899, p. 289.
Fraenkel: München. med. Wochft., 1899, xlvi, No. 42, p. 1369, No. 43, p. 1420.
Wood: Med. Record, 1899, lx, p. 535.
Pic and Lesieur: Jour. de Phys. et Path., 1899, i, p. 1007.
Savtchenko and Mielkich: Arch. Russes de Path., 1899, viii, p. 145.
Blumer: Am. Jour. Obst., 1899, xxxix, p. 42.
Guillemot: Thèse Paris, 1899.
Rendu and Rist: Bull. et. Mem. Soc. Med. de Paris, 1899, 3 xv, p. 133.
Finley: Philadelphia Med. Jour., 1899, i, p. 569.
Reuling and Herring: Bull. Johns Hopkins Hosp., 1899, x, p. 62.
Doleris: Ann. de Gyn. Paris, 1900, liv, p. 1.
Halban: Monatsch.: f. Geb. u. Gynäk., 1900, xi, p. 88-102.
Kronig: Ann. de Gyn., et Obst., 1900, liv, ii, p. 35.
Schlatterfroh and Grassberger: Arch. f. Hygiene, 1900, xxxvii, p. 54.
Pratt and Fulton: Boston Med. and Surg. Jour., June 7, 1900, p. 599.
Soupault and Guillemot: Bull. et Mém. Soc. Med. de Hop. de Paris, 1900, 3, xviii, p. 216.
Howard: Contrib. to Sc. of Med., Baltimore, 1900, p. 461.
Hamig and Silberschmidt: Correspbl. f. Schweizer Aerzte, 1900, xxx, p. 361.
Brabec: Wiener klin. Rundschau, 1900, xiv, p. 145-167.
Page: Canada Lancet, May, 1900.
Barnhardt: Deutsche med. Wochft., 1900, p. 82.
Hitschmann and Lindenthal: Sitzungsb. d. k. Acad. der Wiss., 1901, cx, 3 abt., No. 3, p. 67.
Legros and Leclene: Comp. rend. Soc. de Biol., Paris, June 22, 1901.
Jeanain: Thèse de Paris, 1902.
Legros: Thèse de Paris, 1902.
Rist and Mouchotte: Comp. rend. Soc. de Biol., Paris, 1902, liv, p. 303.
Vallery-Radot: Life of Pasteur (Trans. Devonshire), 192, ii, p. 176.
Uffenheimer: Beitr. zur. path. anat. and Path., 1902, xxxi, p. 388.
Westenhäfer: Virchow's Arch., 1902, clxvii, No. 2, p. 185.
Hirst: Text-Book Obstetrics, 1903, p. 753.
Mouchotte: Thèse de Paris, 1903.
Fraenkel: Ergeb. d. allg. Path. u. path. anat., 1904, viii, p. 403-471.
Kamen: Centralb. f. parasit u. infect., 1904, xxxv, 6, p. 696.
Lenhars: Nothnagel Sp. Path. u. Therapie, 1904, iii, No. 1, p. 320.

Special Article

IMMUNITY.

CHAPTER XXII (CONCLUDED).

TYPHOID FEVER.

Mallory has given a histologic explanation of certain gross and microscopic changes which characterize typhoid fever, the essential feature of which is a massive endothelial proliferation in the lymphoid organs (Peyer's patches, solitary follicles, mesenteric lymph glands, spleen and bone marrow).

Proliferation of Endothelial Cells.

It is thought that this process explains in part the enlargement of the lymphoid organs. The cells are phagocytic, and especially in the lymphoid tissue of the intestines and in the mesenteric lymph glands, englobe and destroy the lymphoid cells on a large scale. A similar proliferation of the endothelium of the perivascular lymph spaces and vessels occurs. The proliferated masses undergo necroses, the lymph vessels become occluded and the process, accompanied by fibrin formation, extends to adjacent blood vessels, causing thrombosis of the latter. The death and sloughing of the lymphoid patches is the direct result of this thrombosis, the process being aided by mixed infection with the intestinal bacteria.

Endothelial proliferation in the spleen and bone marrow is of a similar order, and in these organs the cells show their phagocytic properties by ingesting large numbers of erythrocytes. Emboli are formed in the hepatic lobules by the endothelial cells, which are carried from the spleen to the liver through to the portal circulation, a process which results in the small islands of necrosis (focal necrosis) so often found in typhoid livers (Mallory.) It seems probable that the endothelial proliferation which has been described is due to the rather mild but prolonged action of the disaolved toxic constituents of the typhoid bacillus; the condition is that of an inflammatory hyperplasia. The greatest changes take place in the organs (lymphoid) which contain the bacilli most constantly and in the greatest numbers. It is here that the toxic substance may be present in greatest concentration, as a consequence of the continual solution of the organisms. It has been suggested that the hypoleucocytosis of typhoid fever is due to the destruction of the lymphocytes in the lymphoid organs by the endothelial phagocytes.

Granular and fatty degenerations of the parenchymatous organs occur, but these changes are common to many infectious diseases, the mechanism by which they are produced being unknown.

The conditions in the intestinal tract would seem to favor mixed infections, especially by the colon bacillus and streptococcus, and the primary infection probably decreases the resistance to secondary invasion. The rôle of the colon bacillus in typhoid fever is perhaps not definitely established, although it has been found in the circulation, in abscesses, and in the urine in cases of cystitis accompanying the disease. The typhoid and colon bacilli grow well together. A mixed general infection with the streptococcus causes a grave septic condition characterized by an irregular temperature

Mixed Infections.

curve. This condition may be discovered by blood cultures. It is thought that the streptococcus does not increase the toxicity of the typhoid bacillus, the result being rather a summation of the intoxication of the two infections. Post-typhoidal suppurations are often due to the streptococcus and in many of the metastatic complications (parotitis, pleurisy, peritonitis, meningitis, otitis media) streptococci and staphylococci have been found. Pneumococcus pneumonia not infrequently complicates typhoid fever. A combined infection of typhoid and malaria is said to occur in the tropics; the complication is grave. Typhoid and diphtheria may occur together, and typhoid may be superimposed on acute tuberculosis.

Immunity and Susceptibility.

The period of greatest susceptibility to typhoid is found from the fifteenth to the twenty-fifth years. The resistance of infants and children is not satisfactorily explained. A certain amount of resistance inherited from the mother may persist for some years after birth. It is known that antibodies may pass from the mother to the fetus through the placenta. In very early life the tissues may respond more energetically to incipient infection by the rapid formation of typhoid antibodies, or the phagocytic cells may be more active. The conditions which render older people less susceptible are no better understood. A loss of suitable receptors may have occurred so that the toxic constituents of the bacilli find no anchorage in the body, or the affinity between the receptors and the toxic constituents may have become less. The individual during the course of years may have been gradually immunized by the entrance of nonpathogenic quantities of the bacilli into the circulation. That resistance to typhoid infection is decreased by low nutrition and overwork is a long-known fact.

Natural and Acquired Immunity.

Natural immunity, to a certain degree, is dependent on the hydrochloric acid content of the gastric juice, and it is reasonable to believe that suppression or an insufficient amount of hydrochloric acid may favor the passage of living bacilli to the intestines. The typhoid bacillus is more resistant to the gastric secretion than the vibrio of cholera. Normal human serum is rather strongly bactericidal for the typhoid bacillus. Metchnikoff ascribes natural immunity to the action of the microphages.

The immunity which follows an attack of typhoid fever is generally of long duration, but second attacks occur with some frequency. It has been noted that limited communities which have experienced an epidemic may remain relatively free from the disease over a period of some years, although neighboring districts are attacked. All the susceptible persons having had the disease, a state of temporary regional immunity is created. Acquired immunity of this type is characterized by the appearance of bactericidal amboceptors, agglutinins and typhoid precipitins in the serum of the individual. It is commonly believed that recovery is due to the increase of the bactericidal power of the body fluids, which becomes most marked during the later period of the disease or during convalescence. It seems certain, however, that the new resistance persists beyond the time when the bactericidal power of the serum has returned to normal, which may take place in from one to several years. The bactericidal power sinks rapidly during and following convalescence. However, the general principle is well established that, although the antibodies may have disappeared entirely, they are formed anew much more readily as a consequence of an old infection. This phenomenon was demonstrated in one instance by Neisser and Shiga in relation to typhoid. The tissue cells have, so to say, been trained, and are stimulated by a few micro-organisms to produce such a quantity of bactericidal amboceptors, that the incipient infection is overcome. It is, of course, understood that the amboceptors require the aid of complement in killing the micro-organisms. A second attack of typhoid fever usually is mild.

Metchnikeff does not deny that the amboceptors (fixators) play an important part in acquired immunity, but claims that the new resistance depends chiefly on an increase in the phagocytic power of the microphages (polymorphnuclear leucocytes). This is not clear from the clinical standpoint because of the hypoleucocytosis which is somewhat characteristic of typhoid—a hypoleucocytosis caused chiefly by a disappearance of the microphages. It has been suggested that our conclusions as to hypoleucocytosis are based on examination of the peripheral blood, whereas the mesenteric vessels may show hyperleucocytosis. Mallory, however, found a striking absence of microphages even in the intestinal vessels. Concerning a theory that the hyperplasia of the lymphoid organs serves as a substitute for the hyperleucocytosis, we may recall the findings of Mallory that this hyperplasia is chiefly one of endothelial cells. The importance of these endothelial cells for the destruction of typhoid bacilli needs further investigation.

Prophylaxis.

Prophylaxis should begin with the thorough disinfection of the stools and urine of typhoid patients, and should continue until they no longer contain typhoid bacilli. Strictly speaking, it is not in conformity with good hygiene to discharge a patient until bacteriologic examination of stools and urine show them to be free from the organisms. It would be difficult to carry out this rigid precaution under all conditions of practice, but at all events the stools and urine may be disinfected for a reasonable period, say throughout convalescence. There is no sufficient reason for the neglect of the bacteriologic examination in hospital practice. There is a growing sentiment that typhoid patients in hospitals should be isolated in wards or rooms in which there is a fixed routine for the disposal of infectious materials—urine stools and sputum. Soiled linen, the bath water of typhoid patients, the remnants of food and drink, and the eating utensils should be disinfected before removal from the room. Nurses or attendants should not eat or drink in typhoid rooms.

Hexamethylenamine.

The value of hexamethylenamine in causing the disappearance of bacilli from the urine is now well known, and the advisability of using the drug as a routine measure for public safety is worthy of consideration. The room should be kept free from flies and eventually it should be disinfected, preferably by formalin. During an epidemic, in case the water supply of a community is susceptible to contamination, all water used for drinking, washing of vegetables and eating utensils should be boiled, and that used for general cleaning may be otherwise disinfected. The possibility of dust infection of a house should not be disregarded.

Vaccination.

There are two methods of specific prophylaxis against typhoid: 1, The injection of antityphoid immune serum; 2, preventive inoculation with killed cultures of the bacilli. Antityphoid serum confers a fairly strong and immediate immunity which, however, is of short duration, because of the rapid elimination of the serum. Its use as a general preventive, therefore, is not advocated.

Wright's Method and Results.

Wright has been the most influential factor in showing the utility of protective inoculations against typhoid. His first experimental work was published in 1896. Since that time the inoculations have been carried on extensively in British regiments in India and South Africa. In the statistics which have been collected the occurrence of typhoid among the individuals inoculated was one-half that among the uninoculated. The inoculations reduced the mortality of the disease by one-half. The protection, so far as known, lasts for two or more years, although in some instances infection has occurred in from three to six months after vaccination.

The Vaccine.

The methods of preparation of the vaccine are elaborate in order to insure sterility and standardization. Cultures of the bacillus are grown in nutrient broth for from twenty-four to forty-eight hours, and then sterilized at 60 C. The contents of several flasks are mixed in order to obtain a uniform distribution of organisms, and standardization is then accomplished by a convenient method of estimating the number of bacilli in a cubic centimeter of the vaccine. The purity of the vaccine is insured by bacteriologic tests, and for preservation carbolic acid or lysol is added.

Wright has abandoned his original method of giving a single injection and now recommends two moderate doses, which are given from eight to fourteen days apart. The first dose includes a quantity of vaccine which contains from 750,000,000 to 1,000,000,000 of bacilli, the second 1,500,000,000 to 2,000,000,000. Wright finds that "the inoculation of these quanta induces an ample elaboration of antitropic substances (antibodies) without producing any severe constitutional reaction." We need not here enter into a consideration of Wright's nomenclature. The inoculations increase the bactericidal and agglutinating powers of the serum; it is concluded that an increased resistance to typhoid intoxication is established because the second injection causes milder symptoms than the first and the phagocytic powers of the leucocytes is raised, because of an increase in the "opsonic antitropins" (Chapter XVI). The curve of the antibodies is like that obtained in general by active immunization with bacteria, toxins or other substances. Immediately following the inoculation there is a decrease even of the normal antibodies in the individual's serum. This "negative phase" lasts for from one to several days and corresponds to a period of increased susceptibility. It is quickly followed by a positive phase in which the antibodies and correspondingly the resistance increase rapidly. When very small doses are administered the positive phase may be recognized after twenty-four hours (Wright). Large doses cause a prolonged negative phase and are to be avoided.

Effects.

Following injection, "the local symptoms first make themselves felt after an interval of two or three hours. The effects then seen are the development of a red blush and more or less serous exudation at the site of inoculation, followed by some lymphangitis along the lymphatics which lead, according as the vaccine has been inoculated above or below the middle line of the trunk, in the direction of the glands of the axillæ or of the groin. . . . Even severe inflammation has never led on to suppuration." The exudate is somewhat hemorrhagic, and the pain moderate to severe, but not of long duration. Pain is relieved by hot application or inunction with a carbolic acid ointment which contains ergot. With the technic as recommended at present, "the constitutional symptoms are limited to some headache and to two or three hours of real malaise. . . . The next day his temperature comes down to normal, and he feels comparatively well except in respect to pain at the seat of inoculation."

Local Reactions.

General Reaction.

The statistics warrant the adoption of antityphoid inoculation or vaccination under certain conditions. Its utility in the army has been demonstrated, and probably will be carried out in future campaigns among educated nations. Typhoid never has been a world pest, hence the occasion for universal vaccination does not exist, but in the presence of epidemic so frequently seen in American cities it will be impossible to avoid the consideration of vaccination as a means of protecting the uninfected. The question may be worthy of consideration also in those cities in which typhoid is so extensive as to be called endemic. The procedure is absolutely safe and the results speak for a high grade of effectiveness.

Conditions for Vaccination.

It has been suggested that the "negative phase" described above is a source of danger in the presence of an epidemic. The phase is of so short duration, however, that the danger is minimal. It seems probable that the practice of mixed active and passive immunization would eliminate it entirely. This is accomplished by the combined injection of antityphoid serum and vaccine. The serum assures a positive phase from the start, and before this has subsided, that induced by the vaccine is established. When specific serum is mixed with the vaccine the local action is said to be less severe.

Mixed Active and Passive Immunizations.

The products of autodigestion of typhoid cultures have been suggested as suitable vaccine (Neisser and Shiga). The local reaction is said to be mild, and the body reacts by the formation of bactericidal amboceptors and agglutinins.

Bactericidal serums obtained by the immunization of horses with typhoid bacilli have not shown distinct curative properties. This subject was discussed in its theoretical aspects in Chapter XVIII. Chantemesse immunizes horses with a typhoid "toxin" which is prepared by growing the organism in a liquid culture which contains an emulsion of splenic tissue. One cubic centimeter of this toxin will kill a guinea-pig, a dose which in comparison with other bacterial toxins is very weak. Chantemesse has used his antitoxic serum in the treatment in more than 500 cases, reporting a mortality of about 6 per cent., whereas that among untreated patients was from 10 per cent. to 12 per cent. Although these figures indicate some value for the serum it has had little trial outside of France.

Therapy. Serum

McFadyan and Rowland immunize horses with extracts of typhoid bacilli, which have been ground up while they were kept in a brittle state by the temperature of liquid air. Although antitoxic and bactericidal properties are claimed for the serum, there is no conclusive evidence that it differs from a bactericidal serum prepared in the ordinary way.

Jex produces a high degree of immunity in rabbits by artificial immunization with the typhoid bacillus, then prepares an extract from the spleen, bone marrow, brain, etc., of the immunized animals. The extract is administered by mouth. Jex justifies this method, from the fact that the lymphoid organs have been shown to form typhoid antibodies (Wasserman). From the clinic of Eichorst and some others favorable reports concerning the remedy have been published. It has had no extensive use. The preparation is made by the Serum Institute of Berne (Switzerland) and is expensive.

Preparation of Jex.

The suggestion made by Fraenkel, that typhoid patients be treated by subcutaneous injections of small quantities of killed typhoid bacilli in order to hasten the formation of antibodies has been kept alive through the "typhoin" of Petruschky, but is yet without much practical trial.

The principles and technic of the agglutination test were described in Chapters X and XI. It is sufficiently well known at the present time that the test is a strong corroborative diagnostic sign of typhoid fever, to which there are, however, certain limitations and sources of error. The serum commonly becomes agglutinative on from the seventh to the tenth day, rarely as early as the second or third, and as late as from the twentieth to the fortieth day. The power is highest during convalescence, when it may agglutinate in dilutions as high as from 1 to 5,000 or higher, and from that time sinks gradually. An agglutinating power of from 1 to 160 has often been found at eight months, and of from 1 to 50 after from seven and one-half to eleven years; but the latter duration is not the rule. In performing the test a serum dilution of not less than 1 to 40, or 1 to 50 should be observed as previously set forth.

Agglutination.

The following points are to be borne in mind: Typhoid fever occasionally runs its course without the formation of agglutinins; the reaction may mysteriously be absent one day to recur a few days later, from which the importance of repeated tests becomes manifest in case a first test was negative; rather high agglutinating power for the typhoid bacillus occasionally develops in other infections, as pneumonia, meningitis, icterus, Weil's disease, etc.; the possibility of group agglutination, for the positive elimination of which control tests with related organisms may be demanded.

In case negative results are obtained in a suspicious case the reactions should then be tried with the paratyphoid bacilli.

The test of the bactericidal powers of the serum has been recommended as a substitute for the agglutination reaction, but the technic is so much more complicated that the method will probably not come into general use.

For diagnosis previous to the formation of agglutinins blood cultures should be made as described in a preceding paragraph.

V 4
1905

Clinical Reports

INTESTINAL INDIGESTION IN AN INFANT FROM HAM RIND.

BLANCH N. EPLER, M.D.
KALAMAZOO, MICH.

Patient.—A child, aged 2 years, a patient of Dr. Della Pierce, had complained of vomiting, abdominal pains and diarrhea for two days.

History.—There was a history of an intestinal indigestion and slight fever of several days' duration. The mother stated that during this time the child passed large pieces of "curd" in the stools.

Course.—The symptoms abated with treatment, and several days later the child passed what the mother called a long, green worm. Recovery was rapid. The so-called worm certainly resembled one on gross inspection. It measured 8 inches and was flat, one side presenting a white curd-like appearance; the other a dull, green, slimy appearance. On careful examination, aided by the microscope and KOH, this substance proved to be the rind of ham or bacon, only slightly attacked by the digestive juices. This is a good example of what is to be expected in babies who are allowed to eat everything.

A CASE OF HYDROCEPHALUS AND ACRANIA.

A. E. ENGZELIUS, M.D.
DENVER, COLO.

The extreme rarity of the occurrence should justify the report of the following case of acrania:

History of Mother.—The mother, Mrs. H. G., aged 23, primipara, has never in her life been sick; she also enjoyed perfect health during the entire term of pregnancy. Delivery occurred on July 20, 1905, about a week later than expected. Fetal movements for the last week had been very feeble, if noticeable at all. On examination the day before labor, fetal heart sounds could not be heard, and palpation of the abdomen failed to elicit fetal movements. The patient, however, was in excellent health.

Labor.—Labor pains set in abruptly and were almost from the start continuous or with very brief intermissions. About three hours after beginning of labor the vagina was found to be filled by a "bag of waters" of unusually large size, through which the presenting part could not be palpated. Puncture of the bag effected during the height of a uterine contraction was followed by a discharge of a somewhat soft and anemic brain substance in considerable amount. This was followed by a very forcible expulsion of about a pint of serum. (The explosion was so forceful as to cause the liquid to spurt over my head and on to the wall behind me, a distance of several feet.) The fetus presented in L. O. A. position.

Description of Fetus.—The body and the face were perfectly developed. The anterior portion of the scalp was normal and thinly covered with hair. Posteriorly, from the level of the *foramen magnum* and continuous with the integument of the neck to the vertex of the skull, there extended, instead of integument, a thin, smooth, translucid and elastic membrane resembling a cyst sac. The occipital bone, both parietal bones and all of the vertical portion of the frontal bone, save an edge about three-eighths of an inch high, were lacking. In other words, the skull cap was entirely absent. The base of the skull was perfectly developed. An accumulation of serum had evidently occurred in the occipital region, behind the brain, and was covered in by the membrane, which, in this situation, was found to have taken the place of normal scalp tissue.

Remarks.—The etiology of this malformation is obscure. Delafield and Prudden[1] state it as probable that the accumulation of fluid is secondary to a primary partial anencephalia. Ziegler[2] quotes on the subject various and from each other widely differing opinions. By some acrania is regarded as due to an abnormal accumulation of fluid in the cerebral vesicles occurring before the fourth fetal month. Others oppose this view and believe the condition to be caused by a pressure from without exerted by the cephalic cap of the amnion, lying snugly against the cephalic bend and thus hindering the development of the cranium. Still another opinion looks for the cause in an abnormally sharp curvature of the body of the embryo, occurring where the cephalic end of the embryo has elongated abnormally, or the cephalic envelope has lagged behind in development. This sharp curvature would prevent the change of the medullary plate into the neural canal or cause the already formed canal to be destroyed. Ziegler remarks that many and various causes might very likely be in operation, and that in some instances the malformation must probably be ascribed to a primary agenesis already determined in the germ.

1. Pathological Anatomy and Illstolcgy, fourth edition.
2. General Patholcgy, American edition.

New Instrument

A NEW SEPTOTOME.*

WALTER A. WELLS, M.D.
Throat and Ear Surgeon, Garfield Hospital.
WASHINGTON, D. C.

This instrument is designed to be used as a substitute for the knife or sciasors in cases of uncomplicated deviation of the cartilaginous septum. It cuts out of the cartilaginous portion of the septum a more or less tongue-shaped flap, and it accomplishes with a single incision at least as much as is done in the Asch operation with two separate incisions. Thus

is overcome the necessity of removing one set of scissors to substitute another, which may prove a serious drawback in case one is operating on a nervous patient under a local anesthetic.

In the Asch operation, the result of the incisions is to create four small, triangular segments with their points in apposition, which means that we have four possible points of sloughing. With the septotome but a single flap is cut, and that having what many rhinologists consider the ideal shape of the flap for this operation; the chances for sloughing, therefore, ought to be decidedly lessened.

By means of a screw, the tongue-shaped flap may be shortened to any desired length; and the instrument is so constructed that the flap, when cut, is bent well to the other side, thus converting the two stages of the Asch operation into one. Moreover, I think a decided advantage is gained over the Asch instrument as regards the introduction of my septotome. There is no sharp point to become engaged in the tissues, as it is being introduced. It has a large and a small jaw, the former for the free side and the latter for the side obstructed. Even though one side of the nose be completely obstructed, the shape and size of the smaller jaw is such that it may be wedged in without any laceration of the tissues.

The object of the flat band of steel, which is attached to the larger jaw of the instrument, is that it will act as a spring and force back into the median line the flap which has been cut out of the septum, a very important provision to prevent its being caught by the instrument as it is being withdrawn.

* Presented at Eleventh Annual Meeting of the Laryngological, Rhinological and Otological Society, Boston, 1905.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

103 DEARBORN AVENUE .... CHICAGO, ILL.

Cable Address ... "Medic, Chicago"

Subscription price ..... Five dollars per annum in advance

SATURDAY, AUGUST 19, 1905.

MEDICAL EDUCATION IN THE UNITED STATES.

The present issue of THE JOURNAL contains statistics regarding medical education in the United States for the year ending June 30, 1905. The data published herein were obtained directly from the college authorities, from the annual announcements, and from other sources, and especial care has been taken to insure correctness in every instance. We have had the co-operation of practically all the colleges in this work, and we take this opportunity of extending our thanks to those who assisted us in gathering the statistics.

A careful study of the tables will show that medical education has undergone many changes during the past year. The standards of preparation of study and of graduation have been raised considerably, showing that there is a disposition on the part of all concerned to elevate the standard of the profession by bringing into it men and women who are better prepared to practice medicine, and who will be a credit to the profession in every way. There has been a distinct gain in the entrance requirements during the past two or three years. This change for the better is due, in part, to a few individual colleges, but largely it is the result of concerted action on the part of several organizations which have it in their power to promulgate and enforce rules and regulations for the government of colleges. The state examining boards, in particular, have exercised a most wholesome influence by raising the requirements and by taking an active part in the regulation of preliminary or preparatory education.

Number of Medical Students.—The total number of medical students (matriculants) in the United States for the year ending June 30, 1905, was 26,147, a decrease of 1,995 below the year 1904. Of this number 24,119 were in attendance at the regular schools, 1,104 at the homeopathic, 578 at the eclectic, 114 at the physiomedical, and 232 at the nondescript (unclassifiable) school. The attendance at the regular schools shows a slight increase—457—over that of last year, and a decrease—801—below 1903, and also a decrease —759—below 1902. In the homeopathic schools, there was a decrease of 205 below the attendance of 1904, 394 below 1903. In fact, the attendance at the homeopathic schools has been diminishing steadily since 1900. It was less last year than it has ever been since 1880. Up to the present year, the eclectic schools showed an increase in attendance since 1900. This year, however, the attendance fell to 578, 436 less than for 1904, and the lowest attendance since 1880. The attendance at the physiomedical schools has also fallen off a trifle. In 1904 the attendance at these three schools was 129. In 1905 it was 114.

TABLE OF MEDICAL COLLEGE ATTENDANCE.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med and Nondescript.	Total.
1880.....	9,776	1,220	830	...	11,826
1890.....	13,521	1,164	719	...	15,404
1900.....	22,710	1,909	552	...	25,171
1901.....	23,846	1,683	664	224	26,417
1902.....	24,878	1,417	765	241	27,501
1903.....	24,830	1,498	948	339	27,615
1904.....	23,662	1,309	1,014	357	28,142
1905.....	24,119	1,104	578	346	26,147

These figures tend to show that the attendance at the regular schools is increasing at the expense of that at the sectarian schools. It is evident that the raising of the entrance requirements has been a factor in the lessening of the number of matriculants.

Graduates.—The total number of graduates for the year ending June 30, 1905, was 5,606, a decrease of 141 below the preceding year and 92 below the year 1903. The lowest number of graduates since 1900 was 4,999, in 1902; the highest number was 5,747, in 1904. For the year just closed the percentage of graduates to matriculants was 21.4. For 1904 it was 30.3; for 1903 it was 22.8. The decrease in the number of graduates from the regular colleges in 1905 was 64; from the homeopathic colleges, 95. The number of graduates from the eclectic colleges is 7 greater than it was last year, and 9 in the case of the unclassified college. The graduates of 1905 from the homeopathic colleges have been fewer in number than in any year since 1880. The electic schools, on the other hand, graduated more students in 1905 than in any year since 1890.

TABLE OF MEDICAL COLLEGE GRADUATES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880.....	2,673	380	188	..	3,241
1890.....	3,853	380	221	..	4,454
1900.....	4,715	413	86	..	5,214
1901.....	4,879	327	144	..	5,444
1902.....	4,498	336	138	27	4,999
1903.....	5,088	420	140	41	5,698
1904.....	5,190	371	146	40	5,747
1905.....	5,126	276	153	51	5,606

Women in Medicine.—During the past year 1,073 women were engaged in the study of medicine—4.1 per cent of the total number of medical students, and 219 graduated—4 per cent. of the total number of graduates. In 1904 there were 1,129 women students, and 244 graduated. The proportion of female and male students was practically the same as last year. Of the total number of matriculants, only 221 (20.6 per cent.) were in attendance at the three colleges for women, and 54 (24.5 per cent.) graduated from them. The remaining number matriculated in and graduated from coeducational colleges.

Number of Colleges.—During the past year a number of colleges united, and several became extinct, so that at the present time there are 157 medical colleges in the United States (including the Philippine Islands). The medical department of the University of Porto Rico has not yet been organized and will not

be for some time, but was included in our last year's statistics as an active college. Of the total number of colleges, 126 are regular, 18 homeopathic, 9 eclectic, 3 physiomedical, and 1 unclassified. During the year 2 homeopathic colleges united, and 1 eclectic college changed its faith and is now teaching regular medicine. Six of the regular colleges listed in our tables did not confer degrees, teaching only the first and second years of the medical course. Three colleges (two regular and one homeopathic) are exclusively for women; 63 for men; 91 are coeducational (66 regular, 13 homeopathic, 8 eclectic, 3 physiomedical, and 1 unclassified college). There are five schools to which only colored students are admitted, two less than last year, one having become extinct and the other now admitting both white and colored students. Three schools operate under the continuous course system, the year being divided into quarters, and the student being allowed to attend only a specified number of quarters or semesters in each calendar year. These three schools are located in Chicago. Sixty-eight regular colleges, 4 homeopathic and 1 eclectic college has a university or literary college connection or affiliation. Only two colleges (located in Chicago) impart instruction exclusively in the evening, and three colleges have both day and evening classes.

COMPARATIVE TABLE OF MEDICAL COLLEGES.

Year.	Regular.	Homeopathic.	Eclectic.	Physio-Med. and Nondescript.	Total.
1880.....	72	12	6	..	90
1890.....	93	14	9	..	116
1900.....	121	22	8	..	151
1901.....	124	21	10	4	159
1902.....	121	20	10	4	155
1903.....	121	19	10	4	154
1904.....	133	19	10	4	166
1905.....	126	18	7	4	157

Seventy regular colleges are members of the Association of American Medical Colleges; 14 belong to the Southern Medical College Association; all the homeopathic colleges are recognized as in good standing by the college committee of the American Institute of Homeopathy, and all the eclectic colleges are members of the National Confederation of Eclectic Medical Colleges.

The comparative table of medical colleges shows that the raising of entrance requirements has been effective, in a measure, in reducing the number of colleges. In many of the colleges the number of students in attendance was so small that the college authorities were confronted with the necessity of either effecting an amalgamation with some other college or of passing out of existence. The expense of conducting an up-to-date medical college is greater than the income from a small number of students; hence, stockholders are confronted by an assessment levy which they have no desire to meet. On the other hand, college authorities are recognizing more and more the desirability, for the sake of improving medical education, of having fewer and better medical colleges.

Length of Terms.—Here, too, the upward tendency of educational matters is noticeable. Last year 56.8 per cent. of the colleges had terms of less than eight months' duration, whereas this year only 39 per cent. were in this class. Last year the number of colleges having a six months' term was 27 (16.3 per cent.), whereas this year there were only 15 schools (9.4 per cent.) Last year only 19 colleges (11.6 per cent.) had a session of nine months' duration. This year there were 38 colleges (24 per cent.)

TABLE OF COLLEGE TERMS.†

	Schools.		Per cent.	
6 months	(27)	15	(16.3)	9.4
7 months	(44)	35	(27.0)	22.0
7½ months	(22)	12	(13.5)	7.6
8 months	(34)	46	(20.8)	29.0
8½ months	(13)	10	(7.9)	6.1
9 months	(19)	38	(11.6)	24.0
*10 months	(4)	3	(2.4)	1.9

†Figures in brackets are for year 1904.
*Night schools.

Most of the colleges having six months' sessions are located in sections of the country where educators claim the educational facilities are such as to prohibit terms of longer duration. Most of the homeopathic and eclectic colleges have seven months' sessions. As we have pointed out before, the term "months" is exceedingly elastic. It always includes vacation periods. It is to be hoped that ere long this term will be discarded for "weeks." The college and state examining boards associations have substituted a requirement of thirty weeks, exclusive of holidays, for that of seven months. It is the equivalent of the old requirement of eight months. We have had no reason to change our opinion expressed last year that the ideal way of specifying the length of a college term is by requiring attendance in college for a definite number of hours in each subject taught.

Of the total number of matriculants, about 1.8 per cent. attended the night schools. About 24 per cent. attended colleges having sessions of nine months each. About 37.8 per cent. attended colleges having eight to eight and one-half months' sessions; 27.5 per cent. attended colleges having seven and seven and one-half months' sessions, while only 8.9 per cent. attended six months' sessions. Thus it will be seen that over one-half (61.8 per cent.) of the total number of students registered attended colleges whose sessions average from eight to nine months, whereas only 36.4 per cent. attended the short-term colleges. It is evident, therefore, that the length of the term does not sway the student in his selection of a college, because the majority of students attended the long-term colleges. Students are more and more taking into consideration the standing of the college and what it has to offer. Fees, entrance requirements and length of term are secondary considerations with the better class of students.

THE INFLUENCE OF THE PRIVATE PHYSICIAN ON MEDICAL EDUCATION.

The private practitioner, wherever located, is often likely to feel merely a remote interest in the great subject of medical education. He finished his own undergraduate medical education perhaps years ago, secured

his license to practice, and, occupied each day with his own work, he begins to feel more or less instinctively that the circle of his immediate influence is getting to be well defined. More or less remote from the medical centers, he finds that there is little occasion for him to take any concern in the welfare and progress of the numerous institutions that are carrying on the actual work of training the coming generations of medical men. The methods and machinery of medical study even in his own college are now widely different from these in vogue when he "sat on the benches"; the requirements are different, the annual announcements, of which a number reach him each year, are couched in phrases that convey no definite meaning on cursory glance. Nevertheless, the physicians of the country can and do exercise a powerful influence on medical education, particularly in their close and often confidential relations to the young men in the community who want to study medicine. It is true that in these days of advancing entrance requirements when many students pass directly from the college to the medical school, the old time preceptor has lost prestige, but in spite of that physicians of standing everywhere frequently are called on to counsel young men in regard to the study of medicine; and there is much responsibility in the advisory capacity that physicians assume toward prospective medical students. In the first place, the physician must determine in his own mind whether the applicant for advice is by nature and training properly qualified in mind and morals to be encouraged in his often hastily conceived aspirations. Unquestionably, much disappointment and many disgraceful failures, early as well as late, may be avoided by firmly urging on the manifestly unfit the folly of an effort he can not sustain. Assuming, on the other hand, that there is no evident lack of fundamental qualifications, what are some of the general considerations that should guide the physician in his advice to a young man about to study medicine?

Preliminary Educational Requirements.—As yet there is great latitude on this point on the part of our medical colleges and of our state boards of health in the matter of preliminary educational requirements, but there is a general consensus of opinion that the minimum is a first class high school education; and it must be remembered that this does not suffice for admission to our best equipped schools, which require either part or all of the usual college course, with special attention to physics, biology and chemistry and to French and German. Hence, at the very outset, a serious problem must be settled without prejudice, if possible, to the fullest achievable success in medicine. The question the physician must determine in his own mind, after giving due regard to the individual peculiarities of each case, is which course is more likely to give the greater power, the higher ideals, the better service. We believe that if physicians will consider carefully this question the result will be to the advantage of the standing and efficiency of the profession in this country.

The Medical School.—What are the essential qualifications that a medical school must possess in order to merit the recommendation of the conscientious physician in his advice to the prospective medical student? In the first place, it is evident that it must fulfill the essential requirements of the various boards of state examiners, because it would be unjust to send a student to a school the graduates of which are not generally recognized by state boards. Such schools exist and their graduates consequently carry a most serious handicap when it comes to the selection of the scene of their life work. The following are some of the points that should be considered in the selection of the school:

1. *Equipment and Resources for Teaching the So-called Fundamental Branches, Anatomy, Physiology, and Physiologic Chemistry, Bacteriology, Pathology, Pharmacology.*—It is a recognized fact that a thorough grounding in the fundamental elements of these sciences is necessary in order that the medical student to-day may be properly prepared for the study of the practical or clinical branches. In order to teach properly to medical students the fundamental branches suitable, well-equipped, but not necessarily elaborate or ornate laboratories are essential. Each laboratory or department must be under the charge of a specially qualified man, who, as a rule, should give his whole time to teaching and investigation in his branches. Depending on the number of students and special circumstances there must be in each department a variable number of assistants. It is a recognized pedagogical principle that in elementary laboratory courses there should be at least one instructor for every 10 or 15 students. Anatomy and pathology require human material in order to give adequate instruction and in many of our schools there certainly is a lamentable lack of fresh pathologic material for the study of the gross changes of disease. Manifestly, large sums of money are necessary in order to do this work satisfactorily, money for permanent buildings and equipment, and for annual appropriations for salaries and current expenses. It should be realized that on account of the changes in the past fifteen years or so in the teaching of the fundamental branches, the income from the fees of students no longer suffices to pay for the running of a medical school on a satisfactory basis. Endowments and university connections are necessary.

2. *Equipment and Resources for Teaching the Clinical Branches.*—We are agreed that the day of slovenly dispensary teaching, of the routine clinical lecture, of the crowded amphitheatrical surgical and medical clinic is past. Small classes, individual instruction, bedside work, practical obstetric work, and work in the clinical laboratories are now considered essential in order that the student may become directly and personally familiar with the actual manifestations and methods of treatment of disease. In order to do this, the school must have undivided control of adequate dispensary and hos-

pital facilities and the various clinical departments must be thoroughly organized, so that proper co-ordination is attained. This is the largest weak spot in our medical schools, taken as a whole, and fortunate is the student who is wisely guided in this respect. Attention also may be called to the fact that progressive clinicians, for evident reasons, no longer are satisfied with having their laboratory work "farmed out," and as a consequence the well-equipped medical, surgical and gynecologic clinic each has its own laboratory.

3. *Library.*—In order that the student may secure some idea of the character of the literature of medicine in a broad sense, in order that he may be trained in the use of medical literature, in order that he may learn the necessity of following the main lines of development of medicine, if he wishes to grow and not to fossilize as soon as he leaves the medical school, and for other reasons, not the least of which are the needs of the faculties themselves, libraries are now an essential part of the equipment of the modern medical school. There has been a gratifying growth of interest in medical libraries in the United States during the last few years and several medical schools are now in possession of good libraries, from which students derive great inspiration and benefit. Unfortunately, however, the majority of our schools are not so favored and in numerous instances access can not be had to any medical library because there are large sections of the country that as yet are barren of library facilities. Here is a golden opportunity for physicians to influence medical education directly as well as indirectly, by joining hands in efforts to remedy this great need.

4. *Location.*—Other things being equal the location of a medical school is well worth consideration in the interest of the student. The majority of our schools are located in the larger cities, many of them in undesirable districts, in which vice in various forms flourishes rankly. The kind physician will hesitate in sending young men into the midst of such surroundings in preference to other places with a clearer, purer atmosphere. In this connection, it may not be out of order to ask what are the schools doing for the moral and physical welfare of the student? What about club rooms, gymnasiums, athletic fields, libraries and other influences for a healthy life?

Many other points must be omitted, such as the composition and the manner of appointment of the faculties, the arrangement of the curriculum, the records of the schools as to scientific investigation by the members of the faculties, the night school, etc.

The private physician has the power to influence medical education effectively by taking an interest in medical legislation in the various states. At every session of the state legislature questions of great moment to medical education and on which the members of the legislature need trusted and unselfish advice come up for discussion. Right here is an opportunity for effective influence that there is reason to fear physicians too often neglect. We see that both in his private as well as in his public relations the physician, wherever he may be, has placed on him certain responsibilities with reference to medical education which, if discharged conscientiously and high-mindedly, can not but have a far-reaching influence.

NATURAL RACE IMMUNITY.

Formerly it was believed that some human races possessed an absolute immunity to certain specific infectious diseases. Yellow fever, for instance, was supposed and is regarded even now as of little or no danger to negroes. The natives in yellow fever districts were said to escape the disease because they were "acclimatized." Livingstone declared that the native African was immune to syphilis, but unfortunately it has turned out that in this case the supposed immunity meant only this, that up to that time and for some time afterward syphilis had not been introduced into those parts of Africa traversed by the great explorer. So also has it been claimed that negroes are immune or but little susceptible to the malarial diseases. On the other hand, the colored race has been regarded as peculiarly susceptible to smallpox.

With the gradual growth of exact knowledge in regard to the spread of infectious diseases in all parts of the world, the belief that any human race possesses any absolute insusceptibility to the diseases just mentioned and to others of a similar character is gradually changing. What at first has seemed to be a natural, inborn immunity is, little by little, found to be in reality either a relatively high resistance, the consequence of acquired immunity, or the mistaken result of a prolonged absence of the opportunity for infection to develop.

The different behavior of the same infectious diseases among different races in the same country, as shown, for instance, by the relative infrequency of bubonic pest in Europeans in India and elsewhere as compared with its great frequency among the poorer classes of the natives, finds its true explanation not in any real insusceptibility on the part of the Europeans but in the different conditions that obtain as to cleanliness and general hygiene. The Europeans, in consequence of better hygiene, are not so exposed to infection, and, if exposed, perhaps better able to withstand it because of a greater general but non-specific resistance by virtue of better food and better care of the body in general. The same general observations may be made with reference to cholera. Knowing the sources of the disease, the intelligent civilized man is able to avoid it, while the poor native freely exposes himself to infection.

The Jews of western Europe have, relatively, little tuberculosis. This is not due to any true race immunity, as shown by the prevalence of the disease among the less favored members of this race in Poland, Russia, and in the ghettos of our own large cities.

The idea that the natives of South Africa were im-

mune to malaria was shown to be without any basis in fact by R. Koch, who found that the disease is prevalent among the African children and that the small degree of susceptibility of the adults is due to a true acquired immunity. There is abundant reason to believe that an acquired immunity also explains the alleged natural insusceptibility to yellow fever on the part of the natives in districts in which this disease is endemic. It is to be borne in mind that a severe atttack is not necessary for the establishment of an acquired immunity. It is quite probable that children, possibly to some degree protected by an intrauterine transfer of antibodies, may pass through comparatively mild attacks that are hardly noticed.

We know, too, that infectious diseases that have existed for a long time in a given country gradually appear in less and less virulent form among the people. This is certainly true as regards measles and possibly also scarlet fever, which, when introduced on virgin soil, e. g., the Faro or Sandwich Islands, assume a virulent type.

The increased attention given to tropical diseases, the continued and augmented necessity to guard against the introduction of infectious diseases prevalent among the civilized races into countries occupied by races as yet but little advanced on the road to civilization, and *vice versa*, are going to give us more definite information in regard to this question of true race immunity, the existence of which at the present time appears to be exceedingly doubtful.

THE EPIDEMIC CONTINUES.

The number of cases of yellow fever in New Orleans has steadily increased. On August 15, the total of cases reported to that date was 1,122 and total deaths 184, a mortality of 16.4 per cent., showing decreasing death rate. Scientific medicine can not accomplish the impossible, and the conditions in New Orleans have made inevitable some extension of the epidemic. It is greatly to be regretted that some few physicians undoubtedly have shared in the concealment of patients at points which have thereby become new foci of infection before they were discovered. Other patients have gone without medical care rather than submit to preventive measures. From such patients a large number of mosquitoes have become infected and, of course, are spreading the disease. It must not be overlooked that New Orleans is not under military government, with a physician at the head of affairs, as was Havana when yellow fever was exterminated there. This difference in conditions is all-important. Many landlords and tenants have not complied with the new ordinance to screen cisterns and houses, and they are to be arrested and prosecuted. Even rich men in the best part of New Orleans have been offenders. Up to this time the cases in the American quarter of the city are few and scattered, while in the old quarter the infection has become pretty general. Dr. Berry, of the United States Public Health and Marine-Hospital Service, thought to be immune by reason of a former attack, has unfortunately suffered a severe infection of the fever, and scoffers at the mosquito etiology have made what they could of the alleged fact that he had been sleeping under a screen. Later and more accurate reports will, without doubt, clear up these features of the case. In view of the fact that the health authorities are not receiving quite unanimous public support, it is hopeless to expect an early cessation of the epidemic. The best that can come under such conditions is a reduction in the number of cases and restriction of the spread, though Louisiana, outside New Orleans, now reports many foci. The freedom of a republic is unfavorable to the extermination of an epidemic. By the time the people can express themselves and obtain the necessary laws the necessity for such has passed. Legal processes are too slow to effect prevention. The time may yet come when we shall find it advisable to give full and real military power to our health authorities during epidemics. Communities are now quite willing that boards of health shall have military power as against other communities, but domiciliary inspection and its accompanying restrictions and requirements is not received with general favor. Military enforcement of orders to screen, to clean up, to report suspicious illness, etc., is not desired, but we shall, perhaps, have to come to it if ordinary measures are not responded to more heartily. When this epidemic is over we shall have accumulated a fund of new and useful information obtained in the school of practical experience.

THE TABLE OF STATISTICS OF COLLEGES.

On pages 566 and 567 will be found a table, giving the states containing medical colleges, the name of each college, the population of the city in which the college is located, the number of men and women registered as students during the session of 1904-05, and also the graduates (men and women) of 1905, the total number of teachers in each college, and the number of weeks in the college year. The suffixes, R., H., E., Ph.M., stand for regular, homeopathic, eclectic and physiomedical. Much of the information to be derived from this table has been set forth in the editorial on Medical Education in the United States, page 536. On page 552 we present, in abstract form, essential facts of all medical colleges arranged by states, and on pages 565 and 566 will be found the requirements of the regular, homeopathic, and eclectic medical college associations, also a list of colleges holding membership in these organizations.

EPIDEMIOPHOBIA.

Medical men long have wondered at the inconsistencies of the popular dread of epidemics. People and newspapers became hysterical a few years ago over a score or two cases of Asiatic cholera on the seaboard, while around their offices and homes thousands suffered and died from tuberculosis, syphilis, gonorrhea and typhoid. The small but new enemy seemed infinitely more terrible than the great but familiar ones. The newspapers of August 11 presented a dramatic example of the same peculiar mode of thought. New Orleans reported a total to that date of 756 cases of yellow fever,

with a total of 129 deaths, nearly all the mortality being among the Italians. New York reported up to August 5, 1,496 cases of typhoid, with 395 deaths, many of them among Americans of the better class. Think of the fright, brutality and migration inspired by the smaller figures as compared with the virtual indifference that meets the greater ones! Yet we know that, apart from popular apathy, it is easier wholly to prevent typhoid in the North than yellow fever in the South. Uncontaminated water and food insure freedom from epidemic typhoid, while the prevention of yellow fever necessitates the destruction of myriads of insects as well as the absolute isolation from the mosquitoes of every case of the disease during the first three days of fever. Verily man is yet an illogical animal.

DISTRIBUTION OF MEDICAL STUDENTS.

On pages 568 to 571 will be found a table showing the distribution of students of each college by states. The influence of the proximity of the medical school is seen in the fact that states which have medical colleges have more students in proportion to the population than those which have none. Only three states contributed over two thousand students: New York, 2,423; Illinois, 2,084; Pennsylvania, 2,022. Four states contributed over one thousand students, but less than two thousand: Missouri, 1,138; Ohio, 1,065; Massachusetts, 1,019; Texas, 1,012. Iowa contributed 916 students, and Indiana, 881. The fewest students (9) came from Arizona. Wyoming and Nevada each contributed 13 students; New Mexico, 19; Montana, 30; Idaho, 37; Delaware, 48; Utah, 68; North Dakota, 70, and South Dakota, 93. The states not mentioned contributed between 100 and 700 each. Several of the colleges failed to furnish the information necessary for this table, but, as most of them are small schools, the figures can be disregarded in summing up. Two of these schools are of some size, and, as the majority of their students come from Kentucky and Indiana, the totals of these two states would be increased considerably.

THE EVOLUTION OF INFECTION.

The editorial in The Journal, August 5, entitled "Declining Virulence and Advancing Parasitism" has caused a correspondent to call our attention to an article that appeared in The Journal, May 3, 1890, written by Bayard Holmes of Chicago, in which infectious parasitism is discussed from the same general point of view, i. e., the evolutionary, as in Theobald Smith's address. When Holmes wrote his article our knowledge of the finer mechanisms of the establishment and healing of bacterial infections was in its very beginning; the life history, the mechanisms of ingress and egress, the distribution of most of the pathogenic microbes were as yet largely unknown. Consequently it was only the grosser facts of parasitism and of infection that could be used to construct any theories as to the evolution of infection, and this it must be said that Holmes did with great skill and farsightedness. After reviewing certain of the general facts of parasitism and especially those that indicate that the obligate parasites of tuberculosis, syphilis, measles, scarlet fever, etc., must have occupied long periods of time to become adapted to their present very restricted modes of existence, Holmes asks how has it been possible for man to withstand the attacks of so many enemies for so long a time? He answers that the reason is that the parasites were not essentially destructive; had they been so, neither host nor parasite would have survived; for with the destruction of the host species occurs the destruction of the parasite. The diseases mentioned may become more or less destructive, however, by virtue of secondary mixed infections and other accessory factors, such as all that tend to weaken the body. In the case of facultative parasites, on the other hand, the chances, so Holmes argued, are more against the host in the conflict that ensues, because natural selection has not rendered us indurate to them. It will be seen that Smith's theory goes much farther than Holmes' in that the former includes under his law of declining virulence and advancing parasitism, not only obligate parasites, but also the facultative invasive microbes, i. e., those that appear to be slowly moving, through long periods of time, toward higher degrees of parasitism.

THE EDUCATION OF THE PUBLIC.

The opportunity for public lectures on the subject of hygiene and prevention of disease in connection with the summer assemblies held at various points throughout the country is worthy of cultivation. An example lies before us in the illustrated announcement of the Rockford (Ill.) Chautauqua Assembly. Included in the program, which touches on every subject that might interest the popular audience, are several lectures on the tuberculosis problem by two physicians who are fully competent to speak thereon. Other assemblies have similar lectures, and we believe that if the authorities knew whom they could secure to give lectures of this kind there would be a much greater demand. Any county medical society, we think, will be able to recommend such speakers. In view of the public interest in medical matters, it is the duty of physicians to enlighten the public so that persons of immature or erratic ideas will not need to pose as exponents of the medical profession, as sometimes occurs. But—and this is important if criticism is to be avoided—great care must be taken by those who do this work that the methods adopted are strictly ethical.

Medical News

ILLINOIS.

Hospital Site Selected.—It has been decided that the new Warner Hospital, Clinton, is to be erected on West White Street. The ground is already being cleared.

Personal.—Dr. Buxbaum, Chicago, has succeeded Dr. Edward Banker as home physician of the St. Charles Hospital.——Dr. Louise L. Culver, Sandwich, sailed for Europe last week.——Dr. Charles E. Crawford, Rockford, has been elected grand medical examiner of the Sons of St. George.——Dr. Robert W. McInnes, Belvidere, has been appointed a member of the Jamestown centennial exposition commission.——Dr. Byron C. Stolp, has returned from Europe.——Dr. and Mrs. James C. Gill, Chicago, returned from Europe last week.

Chicago.

Ground Lease Recorded.—Rosa A. Henderson has recorded a ground lease of the Lakeside Hospital site to A. Ralph

Johnstone for a term of ten years from Aug. 31, 1903, at an annual rental of $4,500, with privilege of purchase at any time for $60,000.

Physicians Play Golf.—The Physicians' Golf Association, of which Dr. Franklin H. Martin is president and Dr. Thomas J. Watkins, secretary and treasurer, held its annual tournament at the Midlothian links August 10 and 11. Dr. Allan T. Haight won in the first flight; Dr. Franklin H. Martin the second; Drs. William H. Wilder and Thomas J. Watkins divided the third; Dr. Charles F. Swan won the fourth, and Dr. C. S. Stevenson the fifth.

Deaths of the Week.—For the week ended August 12, 539 deaths were recorded, equivalent to an annual death rate of 14.11 per 1,000. This is a decrease from 14.85, the rate for the previous week, but an increase over 13.41, the rate for the corresponding week of last year. Acute intestinal diseases caused 200 deaths; 222 deaths were of children under 5; heart disease killed 37; consumption, 36; violence, 35; nephritis and pneumonia, each 30, and cancer, 21.

IOWA.

Physician's House Burned.—The residence of Dr. John F. McKittrick, Des Moines, was burned to the ground July 27. The loss is estimated at $8,000.

European Tourists.—Dr. John N. Warren, Sioux City, has gone to Germany.——Dr. and Mrs. James J. Ransom, Burlington, have returned after a year abroad.

Demands Sanitary Cars.—Iowa has started a crusade against insanitary passenger cars and the disease-breeding conditions that characterize many of the coaches on western railroads. This step has been taken by the state medical board and boards in other states will be asked to co-operate in carrying the crusade to a successful issue. It is proposed to secure the thorough cleansing of the passenger coaches at the terminus of every trip, as well as to secure the co-operation of the railroads in preventing the spread of disease through the medium of unsanitary coaches and sleeping cars.

Personal.—Dr. Robert E. Conniff, Sioux City, has been elected president of the State Board of Health, and first vice-president of the Iowa Anti-Tuberculosis Association.——Dr. and Mrs. Jacob W. Wells, Ossian, have been committed to the Iowa Hospital for the Insane, Mount Pleasant, on account of drug addiction.——Dr. Reginald H. Payne, Van Horner, has taken a trip to the West Indies.——Dr. Clarence Hetzel, Davenport, has been appointed assistant physician at the Orphans' Home in that city.——Dr. George P. Neal, Fort Madison, has been appointed a state delegate to the Trans-Mississippi Commercial Congress, which meets in Portland, Ore., August 14-19.——Dr. Paul H. Schaefer, Burlington, has been elected physician of Des Moines County.

KENTUCKY.

Acquitted.—Dr. Edward C. Courtney, Neave, who shot and killed his partner, Dr. W. M. Carney during a "misunderstanding," in December last, was acquitted July 14 on the ground of self-defense.

Personal.—Dr. William M. Hanna, Henderson, has had a cerebral hemorrhage.——Dr. Edward Alcorn, Hustonville, is ill and under treatment in St. Joseph's Hospital, Lexington.——Dr. G. Z. Horine, Graefenburg, fell over a chair, breaking five ribs.——Dr. Irvin Abell, Louisville, who was operated on for appendicitis last month, is making a satisfactory recovery.——Dr. Robert C. H. Rademaker, Louisville, was found unconscious and suffering from a wound in the head July 26.——Dr. Alfred G. Farmer, Louisville, sailed August 14 for Panama.——Dr. Oscar E. Bloch has been appointed lecturer on surgery in the University of Louisville Medical Department.——Dr. J. Mason Morris, Louisville, is seriously ill at Battle Creek, Mich.

MARYLAND.

Bequest.—The Hebrew Hospital, Baltimore, has received a bequest of $1,000.

Insane Asylum Journal.—The *Maryland Hospital News* is a monthly four-page paper which emanates from Spring Grove Asylum for the Insane. It is edited by a patient and is believed to be the only paper of the kind in existence. It was first issued in 1899.

Personal.—Dr. H. Burton Stevenson, Sherwood, Baltimore County, had his left ankle broken while out driving.——Dr. Hugh Warren Brent, Baltimore, is in Berlin and will later go to Denmark.——Dr. William J. Watson, who was operated on for appendicitis, has recovered and has gone to West Virginia for the rest of August.

MASSACHUSETTS.

Donation to Lowell Hospital.—Frederick Fanning Ayer has given $50,000 to Lowell General Hospital, the income of which is to be used for such purposes as the trustees may decide.

Senior Student Drowned.—Walter L. Bradbury, Roxbury, a senior student at Tufts Medical College, who was employed as emergency physician at Nantasket Beach, was drowned at that place while swimming, July 30, aged 30.

Relief Hospital at East Boston.—The City Council of Boston has voted $30,000 for a relief hospital in East Boston, to be conducted like that at Haymarket Square, as a branch of the City Hospital. To this has been added the $11,000 available for the same purpose from the estate of Anne Taggart.

Automobilist Fined.—At the District Court in Dedham, Dr. Howard A. Lothrop, Boston, was fined $5 for speeding his automobile beyond the legal limit of 12 miles an hour. The explanation that he was going to a patient 83 years old in imminent danger of death did not avail in the eye of the law.

Personal.—Dr. Charles P. Thayer, Boston, secretary of Tufts Medical College, has resigned and has been succeeded by Dr. Frederic M. Briggs.——Dr. Hibbert W. Hill has resigned as director of the bacteriologic laboratory of the Boston Board of Health, to become assistant professor of bacteriology in the University of Minnesota and assistant director of the Minnesota State Board of Health laboratory.

MICHIGAN.

Abroad.—Dr. and Mrs. James Cleland, Jr., Detroit, sailed for Europe August 5.——Dr. and Mrs. Theophil Klingman, Ann Arbor, have gone to Europe.——Dr. Cressy L. Wilbur, Lansing, has sailed for Paris.

Hospital Notes.—Frank W. Hubbard, Bad Axe, has given $10,000 to build a hospital at that place, which it is said will be the only one in the Thumb of Michigan.——The Flint council has accepted the bequest of James J. Hurley of $25,000 and a site for a hospital to be known as the Hurley Hospital.——Mrs. Delia Alma Hanmer, Detroit, left by her will $10,000 to endow a room to be known as the Hanmer School of Music Room.

National Guard Changes.—On account of the resignation of Dr. John L. Burkart as major-surgeon of the Fourth Infantry, M. N. G., Captain William T. Dodge, Big Rapids, has been made major and surgeon; Lieutenant Ralph C. Apted, Grand Rapids, captain and assistant surgeon, and Dr. Howard A. Grube, Coldwater, lieutenant and assistant surgeon. Major Burkart is still in the United States service in the Philippine Islands.

Personal.—Dr. G. T. Richards of the medical staff of the Michigan Asylum for the Insane, Kalamazoo, has resigned, and Dr. Bert C. Stripp has been added to the staff.——Dr. James Cummings has been made director of the Pasteur Institute at the University of Michigan, vice Dr. Thomas B. Cooley, resigned.——Dr. Albert P. Ohlmacher, formerly of Gallipolis, Ohio, has been appointed director of the biologic laboratory of Frederick Stearns & Co., Detroit.——Dr. Oliver A. La Crone, Kalamazoo, is critically ill with rheumatic arthritis.

NEW YORK.

Diphtheria in Rochester.—During July 114 cases of diphtheria were reported in Rochester, with 9 deaths.

Fraud Order Issued.—The postmaster general has issued a fraud order against the New York Institute of Physicians and Surgeons and Prof. Thomas E. Adkins of Rochester, N. Y., its president. Newspaper advertisements in the shape of seeming news told of the wonderful "vitaopathic" treatment.

Memorial to Young Trudeau.—A memorial window has been placed in St. John's in the Wilderness, Paul Smith's, in the Adirondacks, in memory of the late Dr. Edward L. Trudeau, Jr. The window was unveiled last week, and shows a figure of a young man in the garb of a traveler with a caduceus in his right hand. Under the window is the inscription: "I will look unto the hills from which cometh my help. This window is placed here in loving memory of Dr. E. L. Trudeau, Jr., by his friends."

New York City.

Off for Europe.—Dr. Eugene Fuller sailed on the *New York*, August 11.——Dr. J. B. Zabriskie sailed on the *Minnehaha*, August 11.——Dr. Albert Leffingwell of Aurora sailed on the *Bremen*, August 10.

Smallpox in Harlem.—Two cases of this disease were discovered in Harlem on August 2. A daily inspection of the block in which they lived has been made since finding these cases, but no more cases as yet have occurred.

Destroying Bad Milk.—The summer corps of the Health Department has made several very thorough examinations of the milk supply of the city, with the result that thousands of gallons have been thrown away. Whenever the temperature of the milk is above 50 F. it is destroyed. The sanitary condition of the shops and utensils used in handling the milk has been improved.

Typhoid Fever at Bath Beach and Bay Ridge.—There are at present 173 cases of typhoid fever in three Brooklyn hospitals—the Norwegian, Seney and Long Island College. So many were leaving the vicinity that a meeting of citizens was held to consider what could be done to check the epidemic. They claimed that the situation was by no means as alarming as had been represented. The Board of Health has prepared a circular letter entitled "How to Avoid the Contraction and to Prevent the Spread of Typhoid Fever," which will be put into the hands of the people living in infected houses.

New Brooklyn Hospitals.—For years East New York and Canarsie have felt the need of an institution with an ambulance service, as the nearest hospitals are from two to five miles distant. The contemplated institution is to take the place of the Bradford Street Hospital, which is an old building entirely inadequate in every respect. A site has been purchased facing Linton Park at a cost of $36,000. The Department of Charities has $50,000 available for the erection of this structure. The building to be erected now will only be a small part of what is designed to build later.——The charities department also has plans drawn for another hospital in Brooklyn, to be built on the Ocean Parkway between Avenue Y and Canal Avenue. This institution will be devoted largely to convalescent patients, will have a capacity of 75 beds and will cost about $100,000.

OHIO.

Joint Meeting and Outing.—The first joint meeting of the Lake and Ashtabula County medical societies was held at the Shore Club, August 7. Dr. H. N. Amidon, Painesville, greeted the guests, and Dr. William H. Leet, Conneaut, responded. Dr. Harris G. Sherman, Cleveland, acted as toastmaster.

Receiver Appointed for Hospital.—On petition of Dr. Robert C. Tarbell, and by consent of the parties concerned, Judge Dillon of the Common Pleas Court, on July 29 appointed Dwight Harrison, an attorney of Columbus, receiver of the new Columbus General Hospital Company, under bond of $10,000.

Wagar Likes West.—Dr. Charles P. Wagar, Toledo, who went to Los Angeles several months ago, has returned to Toledo for the summer. He expects to remain on the Pacific Slope and has commenced the publication of the *California Medical and Surgical Reporter* in addition to the *Toledo Medical and Surgical Reporter*.

Ill and Injured.—Dr. Jared E. Cone, Youngstown, is reported critically ill with heart disease.——Dr. Charles C. Knapp, Zanesville, is reported to be seriously ill from rhus poisoning at a hospital in Portland, Ore.——Dr. Hugh A. Baldwin, Columbus, is able to be out on crutches after an illness of 18 months.——Dr. D. Van Buren Burkett, Columbus, who had both hips broken and sustained internal injuries, July 7, by being crushed between two street cars, is improving.——Dr. J. W. Haverfield, Uhrichsville, fell from a tree, July 1, fracturing several ribs and the clavicle.

PENNSYLVANIA.

Philadelphia.

Bequest.—By the will of Henry Cramer, who died July 28, the German Hospital receives the sum of $500.

Births Exceed Deaths.—During July 2,582 deaths were reported and 2,902 births. The births, therefore, exceeded the deaths by 320.

Milk Inspection.—The number of inspections made in July were 4,928, and 122,685 quarts were inspected. Of this number 1,540 quarts were condemned; 1,332 chemical examinations were made, and 502 microscopic examinations.

Bacteriologic Laboratory Report.—The report of the bacteriologic laboratory for July shows that 1,526 specimens were examined for diphtheria; 416 examinations were made of typhoid fever blood; 474 examinations of milk, and 74 of sputum. The laboratory supplied 598 bottles of antitoxin.

To Fight Typhoid.—There being no sign of diminution in the spread of typhoid fever in this city, the Bureau of Health has prepared a circular containing valuable instructions in regard to preventing the disease. Copies will be distributed by the assistant medical inspectors in a house-to-house visitation throughout the city.

Medical Inspection.—The number of inspections made by the medical inspectors, excluding schools, during the month of July aggregated 14,477. They ordered 414 fumigations, and examined 28 cases for special diagnosis; 164 cultures were taken, 74 injections of antitoxin made, and 980 vaccinations performed.

Violation of Pure Food Laws.—By the action of Dairy and Food Commissioner Warren a number of dealers were held under $400 bail each for court, and two defendants were fined $57.50 each, charged with selling drinks adulterated with saccharin. Warrants have been issued for several dealers, and still others are being watched by the agents of the commission.

Suits Against Meat Dealers.—On August 9 the semi-official announcement was made at the State Dairy and Food Bureau that within the next thirty days fifty or more suits will be brought against meat dealers in central Pennsylvania for selling "doctored" meats. Among the offenders are several agents of western companies. These suits will be brought in about twenty-five counties.

To and from Europe.—Dr. and Mrs. George E. Levis sailed on the *Caronia* from New York, August 8.——Dr. Walter M. L. Ziegler has returned from Europe.——Dr. Robert C. Moon, vice-consul for Liberia, has returned from Europe.——Dr. and Mrs. William B. Van Lennep returned August 8 from abroad.——Drs. V. S. Gaggin, William R. Gieser and M. P. O'Neill sailed on August 12 on the *Merion*.

Irreparable Fire Loss.—The Medical Hall of the University of Pennsylvania, Philadelphia, containing one of the most valuable anatomic collections in the world, was burned August 14. Very few of the specimens were saved. The loss on the building and exhibits is estimated at $150,000, but the anatomic collection can not be replaced. The fire occasioned a panic in the hospital adjoining the medical hall but no casualties occurred.

Hospital Reports.—During July there were admitted to St. Mary's Hospital 234 patients; remaining from last month, 90; discharged during July, 224; total number of patients in hospital, 100; charity patients, 288; pay patients, 36; ambulance calls, 62; brought by patrol, 45. Out-patient department—Brought by patrol, 84; new cases, 775; old cases, 1,569; *x*-ray treatments, 47; radiographs, 8; fluoroscope examinations, 9; total, 2,498.

River Pollution.—On August 9 the report of Chief Medical Inspector Cairns on the pollution of the Schuylkill River was made public by Director Martin. The river and its tributaries were recently inspected by Dr. Cairns and Dr. Seneca Egbert from Reading down to the Fairmount Park. A body of nuisance inspectors have been sent to Manayunk, where the conditions are especially bad. A copy of the report was sent to Dr. Samuel G. Dixon, state health commissioner, who finds much encouragement in the willingness exhibited by the different municipalities along the Schuylkill River to co-operate with the health department in improving the conditions that have been found a menace to public health.

Health Report.—The deaths from all causes during the week ended August 12 aggregated 438. This is a decrease of 45 as compared with last week and a decrease of 3 as compared with the corresponding week of last year. The principal causes of death were: Typhoid fever, 14; whooping cough, 5; diphtheria, 5; tuberculosis, 41; cancer, 14; apoplexy, 16; heart disease, 21; acute respiratory disease, 25; enteritis under 2 years, 83; Bright's disease, 30; premature birth, 11; congenital debility, 11; old age, 8; accidental injuries, 16, and marasmus, over 3 months, 17. There were 162 cases of contagious disease reported, with 19 deaths, as compared with 166 cases and 12 deaths reported the preceding week. There were 109 new cases of typhoid fever, an increase of 9 over last week.

GENERAL.

Missouri Valley Society to Meet.—The eighteenth annual meeting of the Medical Society of the Missouri Valley will be held at Council Bluffs, Iowa, August 24-25. The sessions will be held in the auditorium at Lake Manawa, a summer resort near the city. The president is Dr. S. G. Burnett, Kansas City, and the secretary, Dr. Charles Wood Fassett, St. Joseph, Mo.

American Surgeons Receive Degrees.—At the fourth centenary of the Royal College of Surgeons of Edinburgh, July 22, the honorary fellowship of the college was conferred on Drs. William S. Halsted, Baltimore; William W. Keen, Philadel-

phia; Howard A. Kelly, Baltimore; and *in absentia* Drs. William J. Mayo, Rochester, Minn.; Charles McBurney, New York, and John Collins Warren, Boston.

Death Rates in Large Cities.—The Bulletin of the Chicago Department of Health gives the following statistics of July mortality in cities of more than a half-million inhabitants:

Cities.	Population.	Deaths.	Rate.
New York	3,902,097	7,548	22.76
Chicago	1,990,750	2,280	12.48
Philadelphia	1,417,982	2,582	21.45
St. Louis	636,973	887	16.39
Boston	617,102	1,086	20.70
Baltimore	546,217	1,163	25.05

Chinese Immigration Frauds.—It is reported that Chinese immigrants are using solutions of adrenalin to conceal symptoms of trachoma. This practice is not original with the Chinese, as immigrants from Europe were found to be using this drug for the same purpose (THE JOURNAL, Dec. 17, 1904). It is reported that an American physician, engaged in private practice in Hong Kong, makes a specialty of putting Chinese into condition to pass the immigrant inspectors at San Francisco. The Public Health and Marine-Hospital Service is reported to have the matter under investigation.

THE YELLOW FEVER SITUATION.

INFECTION BELIEVED UNDER CONTROL—RELATIVELY LOW DEATH RATE—OUTSIDE COMMUNITIES STILL PANICKY.

Louisiana.

Steamer Held.—The Norwegian steamer *Saphir*, from Colon, is held at Quarantine, and two patients were taken off the ship and placed in the detention camp at the quarantine station.

Immune Attacked.—Surgeon Thomas D. Berry, United States Public Health and Marine-Hospital Service, one of the first to reach New Orleans, and considered to be immune, was stricken down with yellow fever August 10 and has been removed to the special yellow fever ward in Touro Infirmary.

Spread of the Fever.—Up to August 15, 1,122 cases have been reported in New Orleans, with 184 deaths, from 229 foci of infection. On August 15, 62 cases were reported, with 6 deaths, from 19 new foci. Outside of New Orleans there have been up to date 129 cases and 24 deaths.

Disinfection Day.—Next Sunday has been designated as a day of general disinfection for New Orleans, and appeals have been made to every householder, every boarding or lodging-house keeper, every hotel-keeper, every merchant and manufacturer, and every person having any enclosure of any nature, whether it be a stable or a room in an office building, to fumigate at 10 o'clock on that day, burning sulphur under direction of the Marine-Hospital officials, for at least two hours.

Failed to Screen Cisterns.—Hundreds of affidavits were filed in the courts August 15 against New Orleans property holders, under the new mosquito law, because they have failed to screen cisterns. The cases are disposed of promptly and without favor, each offender being fined $25 and costs.

Now Under Control.—Dr. Joseph H. White, United States Public Health and Marine-Hospital Service, declared on August 15, after revising the official record of the day, that "Yellow fever in New Orleans is now under control. In my judgment the disease will be stamped out with a fight to prevent the spread of infection. There will be other cases, but we now have the situation in hand."

Expert Arrives.—Dr. John Guiteras, the yellow fever expert, arrived in New Orleans August 15, and after a conference with Dr. White and inspections of the original infected district, he declares that the present methods will stamp fever out of New Orleans within forty days.

Would Force Relaxation of Quarantine.—The State Board of Health on August 8 decided to ask the governor to employ the national guard in enforcing some relaxation of the most drastic of the local quarantines in the state. Towns were ordered not to refuse admission to any person having a proper certificate of health not over twenty-four hours nor to any person having undergone six days' detention. Interference with trains and boats is forbidden, and mail, express and freight carried in fumigated cars must be admitted.

Baton Rouge has its local company of state militia acting as quarantine guards.——It is reported that a mass meeting of citizens has voted that there is no foundation for the conclusion that mosquitoes carry yellow fever, and that thereon the medical members of the board of health resigned.

Monroe.—The mayor of Monroe on August 15 called out a company of militia to support a shotgun quarantine established by citizens of Monroe, who objected to the order of the local health board, lightening the quarantine.

Shreveport has had six cases at its detention camp, but no deaths, and Texas has raised the quarantine against freight trains from Shreveport.——Shreveport has a new board of health, the old one having resigned. The new members are Drs. T. Edgar Schumpert, Milton F. Smith and Francis S. Furman, Mr. W. A. Mabry and Mr. Henry Bodenheimer.

St. John.—Quarantine guards at St. John are said to have beaten Judge J. L. Gaudet of that place when he wished to re-enter on his return from Jefferson.——In the same place a woman and child are alleged to have been manacled and taken to an unfit camp.

Vinton.—The postoffice at Vinton has been closed until train service is resumed.

Outside Cases.—Two cases of yellow fever are officially reported at Tallulah.——On August 14 a case was found at Lutcher.——At Diamond and Goodhope plantations one suspicious and three positive cases were discovered.——Two more cases were discovered on the Wildwoods plantation in Jefferson Parish. Another case has developed at Port Barrow, Ascension Parish. Two cases have occurred in La Fourche Parish. Two cases and one death are reported at Porte Celeste, Plaquemine Parish.——A new focus of infection has been found at Lafayette.——At Patterson three new cases de-established.——A suspicious case was reported August 15 veloped, making 49 in all, and an emergency hospital has been from Algiers.——The one case at Alexandria has been succeeded by no more.

Other States.

Alabama.—A dissension has arisen between Dr. William H. Sanders, state health officer, Montgomery, and the governor of the state, in an attempt to fix the responsibility for the delay of four days which occurred before the executive approval of the quarantine order against Louisiana was secured.——A case of yellow fever appeared in Montgomery and, at the request of the Jefferson County Medical Society, Birmingham declared a quarantine against Montgomery, arousing active discussion. Dr. Sanders appeared before the Jefferson County Medical Society, Birmingham, and asked that the quarantine against Montgomery be lifted, as the one imported case there had been properly isolated and was recovering, and there were no other cases. By a vote of 39 to 13 it was ordered to recommend that the quarantine stand, because there was not absolute proof that the Montgomery case came from outside infection. The same meeting requested the city authorities to wage a war of extermination against mosquitoes.——The one yellow fever patient at Montgomery has recovered and without spread of infection.

Arkansas.—Legislative neglect is making trouble in the state, as the last legislature failed to appropriate anything for the State Board of Health, not even making any allowance for the salary of the secretary. Notwithstanding this the state has declared a complete quarantine against all infective places, leaving the execution of its orders to the national guard. No one who has left an infected point can be admitted to the state until five days thereafter. Tropical fruits and household goods from infected districts will not be admitted. These rules were formulated by the State Board of Health, of which Dr. George M. B. Cantrell, Little Rock, is president.——At rifle muzzle Helena refused a river boat permission to take on coal or lower a yawl.——Little Rock requires certificates of health from all who come from the South, and is engaged in oiling ponds and cleaning up the city.——Jonesboro has enforced its quarantine with the local company of national guard.

Georgia.—Savannah has declared a quarantine against persons and personal baggage coming from Louisiana. None from such points will be admitted until six days after departure therefrom.——Columbus has quarantined against all places where yellow fever exists or may exist, requiring those from infected points to undergo twenty days' detention.——Atlanta has in force a train inspection service to look for suspicious cases of illness and to learn where passengers have come from and their destination.

Kentucky.—Louisville has medical inspectors board all trains from the South looking for suspicious cases of illness. A screened ambulance and screened hospital ward are kept in readiness.——Kentucky, while open to refugees, requires transportation officials to report to the State Board of Health every case without a health certificate, thus enabling local supervision of every suspicious case. The board urged screening against mosquitoes and other disease-bearing insects, to-

V 45
1905

gether with destruction of their breeding-places.——Fulton and Wickliffe have declared quarantines against infected points, but the State Board of Health ordered the quarantine raised, and advised the authorities at Paducah that its proposed quarantine would not be recognized, thus leading to the abandonment of the project. The state board said: "Local quarantines are worse than useless, giving rise to a false sense of security which interferes with the exercise of effectual precautions, and imposing unnecessary restrictions on travel and commerce. . . . No refugee is a source of danger unless he develops the disease, and not then if placed in a well-screened room and protected from mosquitoes." Paducah very sensibly set to work oiling stagnant water and cutting weeds that shelter mosquitoes.

Illinois.—It is reported from Cairo that the stegomyia fascia is more prevalent than last year.——The secretary of the State Board of Health believes extraordinary precautions will be necessary to prevent the fever from getting a foothold in southern Illinois. Past experience has shown that in previous epidemics the disease has remained almost dormant during the summer, but has broken out with fury in September and October.——Every passenger and freight train and boat coming from the South is carefully inspected at Cairo, Thebes or Brookport. Day and night watchmen are stationed on the railroad bridge at Cairo and the entire water front is patroled day and night. This rigidity of inspection will not be relaxed until the coming of frost.

Indiana.—It was reported August 15 that a mild case of yellow fever had appeared in Waterford, LaPorte County. The patient had recently returned from Louisiana, where she had helped to nurse two sisters who died from the disease——The health officer at Crawfordsville telegraphed August 15 to the State Board of Health that a case resembling yellow fever had developed there. The state health authorities have sent Dr. Alembert W. Brayton, Indianapolis, to investigate this case.

Mississippi.—Cases have been reported at Sumrall and Lumberton.——Laurel, Ormisburg, Pervis and Aberdeen "will not admit passengers or baggage from any point on the map."——Vicksburg has applied oil to all stagnant waters and lime to noisome spots.——Surgeon S. B. Young, United States Public Health and Marine-Hospital Service, addressed the city council and citizens of Jackson August 1, giving convincing arguments of the truth of the mosquito theory of transmission of yellow fever.——The health officer of Greenville, Dr. O. H. Stone, resigned on August 2, supposedly on account of friction with the city administration regarding quarantine.

New York.—One of the crew of the *Advance*, which arrived on August 3, died in quarantine of yellow fever. The record to date, out of more than 200 suspects, shows three genuine yellow fever cases, two of which were fatal. There were, on August 12, 19 members of ships' crews and passengers at Swinburne Island awaiting developments.

North Carolina.—Wilmington has the quarantine epidemic and refuses to admit persons or baggage from infected districts until they have undergone 15 days' detention.

Tennessee.—Chattanooga, Hamilton County and West Tennessee are quarantined against the infected region; Knoxville welcomes refugees.——Memphis, beginning August 7, enforced rigid quarantine against tropical fruits.——Coffeeville refuses to admit passengers or freight and express matter from infected districts.——At Memphis there has been a disagreement as to the limits of authority of the city and county boards of health that has caused suburban residents some inconveniences at inspection stations.——Dyersburg refuses admission to persons, animals and freight of every character and kind coming from infected districts, and has established a ten-day detention period.

Texas.—Orange, on August 3, reported in detention nearly 100 travelers, including some women and children, while it could not offer adequate accommodations for that many men.——The Gregg County health officer, Dr. W. D. Northcutt, on August 2 "declared quarantine in this county against all points."

General.

Mexico.—The Superior Board of Health of Mexico reports on August 2 only four cases of yellow fever in the entire republic—all at Vera Cruz.——Trains and boats from New Orleans and Panama are being watched.

FOREIGN.

Poisoning from Shellfish in Scotland.—Dr. A. K. Chalmers, medical officer of health for Glasgow, in a recent report to the town council, calls attention to the dangers of poisoning from shellfish. During past summers many cases of enteric fever have been traced to consumption of shellfish at seaside resorts. For example, in connection with the Lochgilphead cases of enteric fever of two years ago, the regular gatherers of shellfish at that place rejected such as were regarded by them as "sick" because they lay on the surface, while the visitors collected and ate these without hesitation, not knowing that the healthy mollusc of the species then implicated was to be found below the surface of the sand. Thus, while visitors sickened after consuming shellfish gathered on the spot, no cases were traceable among the consumers of those dispatched to Glasgow in the course of trade.

South African Medical Congress.—The seventh South African Medical Congress was held at Maritzburg, June 12-17. Over seventy medical men were present, a record attendance, as in the majority of cases as great sacrifice of time and money was involved as for physicians in this country to attend the Portland session of the American Medical Association. The address of welcome was delivered by the governor of Natal. The *Natal Mercury*, kindly sent us by Dr. W. A. Backenstoe, states that Dr. Hyslop, in his presidential address, laid emphasis on the necessity for uniformity in the compilation of vital statistics and for uniformity in medical laws throughout the various South African colonies. A discussion took place on the report of a committee appointed at the last congress to consider the subject of forming a South African Medical Guild as a center for medical organization for all matters other than scientific work. The principle of a guild was adopted, but later a proposal definitely to instruct the committee to carry the principle into effect was dropped and it is understood that those interested in the subject will move on their own responsibility. The feeling that some such organization is urgently needed is universal, and although a strong party maintains that the work could be done by the branches of the British Medical Association, an insuperable obstacle to this lies in the objection of the practitioners in the Transvaal and the Orange River Colony to establish branches; while unless an organization extends over all the colonies it would be of little use.

Correspondence

Compensation of Physicians as Expert Witnesses.

CHICAGO, Aug. 11, 1905.

To the Editor:—In THE JOURNAL, Aug. 5, 1905, page 420, reference is made to the Nebraska case of Main vs. Sherman County, where it was decided, as has often been done in similar cases, that "one testifying as an expert on a subject requiring special knowledge and skill, in the absence of a special contract is entitled only to the statutory fee." The details of this particular case are unknown to me, but I do know that often the physician's testimony and advice constitute the determining factor in many law suits. I know also, by personal experience, that only too often such assistance is forgotten as soon as a favorable decision is rendered, and that even a moderate compensation for his services is refused. In order that the profession may not continue to be ruthlessly mulcted and shamefully imposed on, I beg to direct attention to the decision of the Appellate Court of the First District of Illinois, filed Dec. 23, 1898, in my case against Emlen S. Blye, where the judgment of the Circuit Court is reversed and the cause remanded. The details of this case were presented by me to the Illinois State Medical Society at its Galesburg meeting, May 18, 1898, and are published in the official transaction of the society for that year, as well in the *Medical Record*, Aug. 27, 1898. The result of my contention, which extended over nine years, conserves to some extent the rights of expert witnesses. It determines that if a physician, at the request of a party to a suit, performs any extra service for such party in the prosecution of the suit, a contract for compensation for such services is a valid one, and a recovery can be had thereunder. The point as to the legality of contract for extra compensation beyond the statutory witness fee, for the mere giving of expert testimony, was not raised. It is possible the Dixon decision has definitely settled that question. As an expert always renders some service beyond that of merely testifying, in the way of counseling with attorneys, if not otherwise, the probability is that the effect of

the Dixon decision is nullified. In any event, members of the profession are now protected against those who would accept the benefit of their services and then repudiate the contract under which these services are rendered, provided only the contract to be for more than the naked testimony.

When called as an expert witness, therefore, the physician in most instances may confess his inability to answer satisfactorily the hypothetical question without an examination of the patient, which must be paid for. As the court expressly said in the well-known Dixon case: "A physician can not be punished for a contempt for refusing to make a postmortem examination, unless paid therefor, nor can he be required to prepare himself in advance for testifying in court by making an examination, or performing an operation, or resorting to a certain amount of study, without being paid therefor." I am anxious that the rights of the physician in these cases should be understood. I received nothing in my case but my experience, for the patient went into bankruptcy about the time the decision was rendered in my favor. Nevertheless, it gives me much satisfaction to say that my legal fight of nine years established a principle which the profession is entitled to take advantage of and which, I trust, will tend to prevent further injustice and imposition.

DENSLOW LEWIS.

Association News

Biographical Card Index and American Medical Directory.

In accordance with the decision of the House of Delegates at the Portland session, the American Medical Association is accumulating data for a biographical index of the medical profession of the United States, and also material for the American Medical Directory, which will shortly be issued. The assistance and co-operation of physicians is requested in this effort to publish a reliable directory of our profession without any suggestion of commercialism. In this connection we desire to call attention to advertising page 61. We hope that every reader of THE JOURNAL will give this matter his immediate attention.

Marriages

E. P. BROWN, M.D., to Miss May Belle Hill, both of Bessemer, Ala.

DICKINSON GORSUCH, M.D., to Miss Irene Evans, both of Baltimore, August 9.

J. BOYD SWONGER, M.D., to Miss Mabel Broome, both of Voth, Texas, July 31.

W. E. PUGH, M.D., to Miss Austin, both of Miami, Fla., at DeLand, Fla., July 31.

WILLIAM H. LENCE, M.D., Jonesboro, Ill., to Miss Mary Alden of Anna, Ill., August 2.

CARL S. WASSERWEILER, M.D., to Miss Edith Dunold, both of Milwaukee, in Chicago, July 17.

ERNEST S. MATTOX, M.D., Terre Haute, Ind., to Miss Emma Meseke of Seymour, Ind., August 3.

HUBERT D. BRENNAN, M.D., Bristol, Conn., to Miss Celia Fanning of Hartford, Conn., August 2.

D. NICOLA GOLINO, M.D., Providence, R. I., to Miss Carlotta Menente of Italy, at Boston, August 1.

JOHN H. DOYLE, M.D., Grafton, W. Va., to ANNIE C. GREANY, M.D., of Fall River, Mass., August 10.

HOMER F. PAGE, M.D., Magdalena, Mexico, to Miss Maude Hitchcock of Wellington, Kan., June 28.

HARTZELL LANGSTAFF, M.D., Roberts, Ill., to Miss Martha J. Shute of Melvin, Ill., at Chicago, July 8.

JAMES CLELAND, M.D., JR., to Miss Anna Estelle Siebert, both of Detroit, at New York City, July 31.

WILLIAM PITT HALL, M.D., Frankfort, N. Y., to Miss Susie Marie Douglass of Earlville, N. Y., July 26.

BERNARD N. MCLAFFERY, M.D., to MAYME JEFFRIES, M.D., both of Portland, Ore., at Ogden, Utah, July 26.

FRANK R. STRONG, M.D., Syracuse, N. Y., to Miss Hallie Gerdeane Morgan of Earlville, N. Y., August 2.

RICHARD J. DOWDALL, M.D., to Miss Katherine Johnson, both of Crescent City, Cal., at San Francisco, August 3.

WILLIAM CROZIER FAWCETT, M.D., Starkweather, N. D., to Miss Frances Edith Maywood of Toronto, August 1.

LUTHER PECK, M.D., Plymouth, Mich., to Miss Jeanne Thompson of Rochester, N. Y., at Union Lake, Mich.

LOUIS SMIRNOW, M.D., Bridgeport, Conn., to Miss Mabel A. Munn of Botsford, Conn., at New York City, February 17.

WALTER VERNON BREM, M.D., Charlotte, N. C., to Miss Marion Wolcott Winkler of Milwaukee, at Pine Lake, Wis., August 3.

Deaths

L. J. Frazee, M.D. Medical Department of the University of Louisville, 1841, for many years a member of the faculty of his Alma Mater and of the Kentucky School of Medicine, and in his day one of the leading physicians, medical teachers and writers of his city, but for many years retired from practice and devoted to industrial and literary pursuits, died at his home in Louisville from senile debility, Aug. 12, 1905, aged 86.

Joseph Samuel Demaree, M.D. Memphis (Tenn.) Hospital Medical College, 1898, of Frankfort, Ky., a member of the state and county medical societies, died at the home of his father, near Bagdad, Ky., August 4, from typhoid fever, after an illness of five weeks, aged 38. At a meeting of the Franklin County Medical Society, August 5, resolutions of eulogy and regret were adopted.

Robert Fowler Beattie, M.D. McGill University Medical Department, Montreal, 1897, Brookline, Mass., a member of the Massachusetts Medical Society, was drowned off Phillips Beach, Swampscott, August 6, while taking his morning plunge, aged 35. For several years he served as ship's surgeon on the Cunard and Dominion lines.

Thomas J. Mitchell, M.D. University of Louisville (Ky.) Medical Department, 1848, surgeon of the One Hundred and Seventh Illinois Volunteer Infantry in the Civil War, and a prisoner in Libby Prison, died at his home in Bement, Ill., August 3, from dropsy, after an illness of more than a year, aged 82.

Horace Laidlaw, M.D. University of California Medical Department, San Francisco, 1880, chief surgeon of the Oceanic Steamship Company for five years, and surgeon to the Spreckels plantations at Maui, Hawaii, for three years, died at his home in San Francisco, August 2, after a long illness, aged 45.

Robert Edwin Jameson, M.D. Harvard University Medical School, Boston, Mass., 1861, assistant surgeon and surgeon to the Eleventh Massachusetts Volunteer Infantry during the Civil War, died at his home in Jamaica Plain, Boston, August 4, from acute gastritis, after an illness of three hours, aged 67.

Orange H. Adams, M.D. Dartmouth Medical School, Hanover, N. H., 1884, a member of the American Medical Association, prominent in the medical and municipal life of Vineland, N. J., died at his home in that place, from spinal paralysis, August 6, after an illness of one week, aged 49.

Frank B. Donnelly, M.D. New York University, New York City, 1893, ill with tuberculosis, and discharged from the Rhode Island Hospital as incurable, committed suicide by shooting himself, in his office in Providence, R. I., while despondent, August 3, aged 42.

Robert Maitland Petrie, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1869, in 1872 and 1874 city physician of Jersey City, N. J., died suddenly at his home in Jersey City, August 3, from heart disease, aged 54.

John Gilman Pike, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1847, one of the oldest practitioners of Strafford County, N. H., died at his home in Dover, July 31, after a long period of feeble health, aged 87.

Merritt E. Graham, M.D. Michigan, 1878, of Rochester, N. Y., for nine years coroner of Monroe County, died at the Graham Sanatorium, Rochester, August 3, from disease of the stomach, after an illness of three years, aged 49.

E. G. Martin, M.D. University of Louisville Medical Department, 1905, of Rocky Hill, Ky., died at Glasgow, Ky., July 21, from the effects of an overdose of morphin, taken, it is supposed, with suicidal intent.

John W. Morrow, M.D. Jefferson Medical College, Philadelphia, 1872, said to be the oldest practitioner in Forest County, Pa., died at his home in Tionesta, August 5, after an illness of several years, aged 68.

Dowdell Wood Allen, M.D. Medical Department of the University of Tennessee, Nashville, 1905, died at his home in Winona, Texas, May 25, from typhoid fever, after an illness of 32 days, aged 23.

Julius C. Bowen, M.D. Jefferson Medical College, Philadelphia, 1856, major-surgeon of the Second Iowa Volunteer Cavalry in the Civil War, died at his home in Rochester, N. Y., August 2, aged 74.

Seth D. Boggs, M.D. Bellevue Hospital Medical College, New York City, 1886, died suddenly while being carried into his house in Brooklyn, N. Y., August 10, from heart disease, aged 53.

William Ray Bramlett, M.D. University of Louisville (Ky.) Medical Department, 1881, died at his home in Florence, Ala., August 2, from septicemia, after an illness of two months, aged 43.

John C. Coats, M.D. Vanderbilt University Medical Department, Nashville, Tenn., 1878, died at his home in Huntsville, Ala., July 30, after an illness of only three days, from typhoid fever.

Frederick Brittin, M.D. College of Physicians and Surgeons of Chicago, 1904, of Divernon, Ill., died at the home of his parents in Springfield, Ill., from septicemia, July 31.

Orville A. Harding, M.D. Rush Medical College, Chicago, of Chicago, was drowned while hunting, in the Flambeau River, near Ladysmith, Wis., August 11, aged 35.

Joseph W. Kumpe, M.D. Medical College of Alabama, Mobile, 1873, died at his home in White Sulphur Springs, Mont., August 4, after a lingering illness, aged 58.

Daniel R. Crow, M.D. Memphis (Tenn.) Hospital Medical College, 1891, died at his home in Lay, Miss., August 2, from heart disease, after a long illness.

Louis A. Hortubise, M.D. Laval University Medical Department, Quebec, 1894, died at his home in Lowell, Mass., August 5, after a long illness, aged 33.

William R. Nevin, M.D. New York, 1887, died at his home in Jersey City, N. J., from cirrhosis of the liver, August 2, after a long illness, aged 45.

James Parker, M.D. Trinity Medical College, Toronto, Ont., 1871, died at his home in Ballard, Wash., August 2, from heart disease, aged 63.

David L. Deyo, M.D. Missouri, 1869, of Louisiana, Mo., died at St. Elizabeth's Hospital, Belleville, Ill., August 1, aged 79.

Philip Fischer, M.D. University of Würzburg, Germany, 1868, died at his home in Cincinnati, August 9, aged 60.

Book Notice

THE PHARMACOPEIA OF THE UNITED STATES OF AMERICA. By Authority of the United States Pharmacopeial Convention held at Washington, 1900. Eighth Decennial Revision. Revised by the Committee of Revision and published by the Board of Trustees. Official from Sept. 1, 1905. Cloth. Pp. 692. Price, $2.50. Philadelphia: P. Blakiston's Son & Co.

After five years' labor the revision of the Pharmacopeia of the United States has been effected and the work appears in a stately volume of 700 pages. Following precedent, 70 pages are devoted to a historical introduction, abstract of the proceedings of the national convention for revising the Pharmacopeia, with a list of the delegates from the various medical and pharmaceutical bodies and of the federal medical service represented, preface and introductory notices giving general directions for physical constants and standards, general processes and operations and a number of lists, i. e., of articles added, articles dismissed, changes in official Latin and English titles and comparative table showing the strength of the more important pharmacopeial substances and preparations in the preceding and the present Pharmacopeia. Then follows the text of the official articles, comprising over 500 pages, with the definitions in large, clear type and the tests in smaller print. While many new articles have been added, the number has not been increased, since an equal number of articles has been dismissed. The principal additions comprise twenty synthetical chemicals, an equal number of natural or synthetic principles representing the volatile oils, the suprarenal and thyroid glands, antidiphtheritic serum, a number of fluid extracts, several elixirs, emulsions, solutions, oleats, ointments, tinctures and effervescent salts. The dismissals are represented largely by drugs more or less obsolete and their respective extractive preparations, a number of pharmaceutical preparations superseded by more eligible and definite preparations and certain salts inorganic and organic now, but little used. The principal changes are represented by the change in titles of some chemicals, such as the acids of arsenic and chromium to arseni trioxidum and chromii trioxidum respectively, from carbolic acid to phenol, and chloral to chloral hydratum, the latter to conform to their chemical character. The chemical nomenclature has been retained in preference to that adopted by the American Association for Advancement of Science, in which the final "e" is deleted in the halogens and alkaloids. The pharmacopeial usage in distinguishing between alkaloids and glucosids by omitting the final "e" in the latter seems too popular to give way to the continental method adopted by the American Chemical Society. An innovation is the so-called purity rubric, which appears as a short definition at the head of all definite chemical compounds through which the minimum degree of purity of the articles is limited, thus: Potassium iodid KI 164.76. "It should contain not less than 99 per cent. of pure potassium iodid, and should be kept in well-stopped bottles." This allows not to exceed 1 per cent. unavoidable innocuous impurities, which are strictly limited in the nearly solid page of fine print giving tests and reactions, by which the merest trace of noxious impurities, heavy metals, etc., are absolutely excluded. In this respect the work is believed to be the most complete of any pharmacopeia and satisfactory from a pharmaceutical standpoint. While the changes in the strengths of articles, particularly galenicals, are not numerous, yet they are important, since the principles of standardizing drugs and their preparations has been extended to some sixteen drugs and many of their preparations. The most important change of all, however, at least from the physician's standpoint, is the change in the strength of some of the tinctures. In conformity with requirements of the International Conference for the Unification of Potent Medicines of 1902, the tinctures, except the compound ones, have been put in two groups: (1) Tincture of potent drugs to be 10 per cent. drug strength; and (2) of non-potent drugs 20 per cent. drug strength. Thus the 15 per cent. tinctures, including most of the so-called narcotic drugs, have been discarded for the 10 per cent. strength, and are, therefore, one-third weaker. The two largely used tinctures, aconite and veratrum viride, 35 and 40 per cent. drug strength respectively, have thus been reduced to the 10 per cent. strength. This is of the greatest importance to physicians and should have the widest publicity so that the fact may be generally recognized by September 1, when the new Pharmacopeia goes into effect—becomes official. Another innovation is the introduction of the average doses expressed in metric and customary weights and measures. This is not intended as a limitation on the physician, but simply an attempt to furnish some sort of official or authoritative standard for reference to pharmacists, especially as a guide in compounding and dispensing prescriptions. In order to avoid conflict with federal, and especially state, laws regulating standards for articles of food, it is especially announced in the preface that the standards of the United States Pharmacopeia are designed for and apply only to the articles for medicinal uses as distinguished from their employment as foods or in technical and industrial uses. The usual appendix of reagents and a valuable collection of tables for reference completes the volume, which, barring some minor deficiencies, is certainly the most elaborate pharmacopeia yet devised for any country.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

LIFE AND HABITS OF THE MOSQUITO.

WHITEWRIGHT, TEXAS, Aug. 6, 1905.

To the Editor:—Please inform me where I can procure a recent work on the anatomy, habits and habitat of the various species of the mosquito S. H. LANDRUM, M.D.

ANSWER.—Our correspondent is one of many who ask the same question. "The Mosquito," by Howard, cloth, $1.50, is a good book.

An excellent article on the subject, by Dr. John R. Taylor, Havana, Cuba, was published in THE JOURNAL, July 8, 1905, page 90. The best information is to be had in the bulletins of the United States Public Health and Marine-Hospital Service, which may be had by addressing the surgeon general, Dr. Walter Wyman, Washington, D. C.

INTERNATIONAL MEDICAL CONGRESS.

McKEESPORT, PA., Aug. 9, 1905.

To the Editor:—Will you kindly inform me of the date of the meeting of the International Medical Congress in Lisbon next year? T. L.

ANSWER.—The International Medical Congress will meet April 19 to 26, 1906. The date and the program are given in THE JOURNAL, July 29, p. 337. Other information is in July 22, p. 262 (report of American Committee), June 17, pp. 1941 (excursion announcement) and 1942, and in Vol. xliv, pp. 139, 881, 1046, 1129 and 1140.

PHYSICIANS' CARDS IN NEWSPAPERS.

DR. L. sends us the cards of some physicians from local newspapers, and asks us if they are strictly ethical. In addition to the name, address and telephone numbers, one of these cards states that the advertiser is "Surgeon to —— hospital, Surgeon to to —— railway. United States examining surgeon, etc." The other gives similar facts, and in addition states: "Glasses accurately fitted. Surgery, and diseases of women."

ANSWER.—The profession generally regards as reprehensible the advertisement in newspapers by physicians of anything more than name, address, office telephone numbers, and special branches to which practice is limited. The details of the interpretation of this general rule, however, are to be handled by the local county medical society. Our correspondent and others will be interested in referring back to what we have already said on this subject in THE JOURNAL, Aug. 13, 1904, p. 485; Oct. 3, 1904, p. 1073; and May 20, 1905, p. 1631.

DETERIORATION OF APOMORPHIN HYDROCHLORATE.

COLUMBUS, GA., Aug. 3, 1905.

To the Editor:—What chemical change takes place when apomorphin hydrochlorate changes color from age? Is this a deterioration, and is the resulting compound poisonous? M. C.

ANSWER.—This is so unstable a compound that the U. S. Pharmacopeia (1905) directs that it should be kept in small, dark, amber-colored vials which have been previously rinsed with diluted hydrochloric acid and dried. The compound of this alkaloid prepared artificially from morphin with HCl is so delicate that on exposure to light and air it acquires a greenish tint, showing decomposition. The exact nature of the chemical change is obscure. When discolored the article should not be used.

GERMAN MEDICAL JOURNALS AND DICTIONARIES.

DETROIT, MICH., Aug. 5, 1905.

To the Editor:—The physicians, Drs. Chassell and Bush, who inquired for German-English dictionaries, etc., would undoubtedly appreciate the German and English dictionary edited by Frederick Treves and Hugo Lang, published by J. & A. Churchill, 11 Burlington Street, London, England. L. BREISACHER.

State Boards of Registration

COMING EXAMINATIONS.

Wyoming State Board of Medical Examiners, State Capitol, Cheyenne, Wyo., September 6. Secretary, S. B. Miller, Laramie.

Massachusetts Board of Registration in Medicine, State House, Boston, September 12-13. Secretary, E. B. Harvey, Boston.

Index to State Board Reports.—Reports of other state board examinations which have been held this year have been published in THE JOURNAL as follows: February 11, page 488, ARIZONA January report. February 18, page 566, DISTRICT OF COLUMBIA and OREGON January reports. February 25, page 646, INDIANA, NORTH DAKOTA, RHODE ISLAND and SOUTH DAKOTA January reports. March 4, page 732, WISCONSIN January report. March 11, page 810, VERMONT February report. March 18, page 896, ILLINOIS and WASHINGTON January reports, with the questions asked in Washington. April 1, page 1059, KANSAS February report. April 15, page 1211, MAINE March report, with the questions asked in OKLAHOMA at the examination held in March. April 22, page 1303, CONNECTICUT March report, and MONTANA and NORTH DAKOTA April reports. May 6, page 1467, ARKANSAS April report. NEBRASKA February report, OKLAHOMA March report, and UTAH January and April reports. May 13, page 1553, RHODE ISLAND and MINNESOTA April reports, with questions asked in Minnesota. May 20, page 162, CALIFORNIA, INDIAN TERRITORY, IDAHO and KENTUCKY April reports, with questions asked in Kentucky. May 27, page 1699, ARIZONA and WEST VIRGINIA April reports. June 3, page 1795, DISTRICT OF COLUMBIA April report. June 17, page 1950, NORTH CAROLINA May report, with list of questions asked. June 24, page 2001, ILLINOIS April report and LOUISIANA May report. July 1, page 60, ILLINOIS May report. July 8, page 125, INDIANA May report. July 15, page 209, KANSAS April report, MINNESOTA and WYOMING June reports, and questions asked at PENNSYLVANIA June examination. July 29, page 344, NEW JERSEY and DELAWARE June reports, and UTAH July report. August 12, page 487, ARKANSAS July report and SOUTH CAROLINA June report.

Connecticut July Report.—Dr. Charles A. Tuttle, secretary of the Medical Examiners of the Connecticut Medical Society, reports the written examination, held at New Haven, July 11-12, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of persons examined was 27, of whom 23 passed and 4 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
Yale University, (1902) 80.1, (1904) 78.7, (1905) 81.8, 80.5.	78.1, 80.1,	81.4,
University of Pennsylvania	(1901)	78.2
Tufts Med. Coll.	(1905)	75.6
College of P. and S., New York.. (1903) 84.2;	(1905)	82
Jefferson Med. Coll.	(1905) 77.2,	81.4
University of New York	(1880)	77.6
University of Vermont	(1901)	78.4
Baltimore Med. Coll.	(1905)	79.6
University of Maryland (1901) 78.1;	(1905)	82.3
College of P. and S., Boston	(1904)	75.6
College of P. and S., Baltimore (1905) 76.2,	79.9	80.1
College of P. and S., Cleveland	(1905)	77.5
FAILED.		
Long Island College Hospital	(1896)	73.2
Maryland Med. Coll.	(1905)	60.7
University of Michigan	(1890)	72
Tufts Med. Coll.	(1905)	68.6

Illinois May Report.—Dr. J. A. Egan, secretary of the State Board of Health of Illinois, reports the written examination held at Chicago, May 3-5, 1905. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 417, of whom 410 passed and 7 failed. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
American Coll. of Med. & Surg. (1904) 75; (1905). The grades of 76 and 77 were reached by one each; 78 was reached by five; 79, by three; 80, by five; 81, by five; 83, by three; 84, by one; 85, by two; 86 by one; 87 by three; 89 and 90 by one each.		
Barnes Med. Coll.	(1904)	78
Bellevue Hosp. Med. Coll.	(1880)	1
Bennett Med. Coll. (1905). The grade of 78 was reached by one; 79, by four; 80, by one; 81, by two; 82, by three; 83, by four; 84, by four; 85, by one; 88, by 2.		
Cleveland Homeo. Med. Coll.	(1905)	85, 86
College of Med. and Surg., Chicago (1904) 76; (1905)	79, 81,	82, 91
College of P. & S., Chicago (1904) 78, 90 (1905). The grade of 77 was reached by one; 78, by four; 79, by three; 80, by five; 81, by nine; 82, by eighteen; 83, by fourteen; 84, by twenty-two; 85, by nineteen; 86, by sixteen; 87, by thirteen; 88, by nine; 89, by three; 90, by three; 92 and 95, by one each.		
Dearborn Med. Coll.	(1905)	82, 85, 86, 86, 87, 86
Eclectic Med. Inst., Cincinnati	(1885) 77; (1905)	77
Hahnemann Med. Coll., Chicago (1905). The grade of 79 was reached by seven; 80, by three; 81, by four; 82, by eight; 83, by one; 84, by six; 85, by two; 86, 87, 88, by one each; 89, by two.		
Harvey Med. Coll.	(1905)	81, 84, 88
Hering Med. Coll.	(1905) 77, 80, 81, 82, 82, 82, 84, 86,	88
Illinois Med. Coll.	(1905) 77, 81, 82, 82, 83,	88
Jenner Med. Coll. (1904) 82; (1905)	76, 80, 80, 81, 83,	87
National Med. Univ., Chicago (1904) 85; (1905)	75, 76, 77,	78, 80, 82
Northwestern University (1905). The grades of 79, 81, 82 and 94 were reached by one each; 83 was reached by four; 84, by six; 85, by five; 86, by eight; 87, by five; 88, by nine; 89, by fourteen; 90, by eight; 91, by six; 92, by three; 93, by two.		
Rush Med. Coll. (1903) 82; (1904) 86, 87, 90, 90, 94 (1905). The grades of 81, 82 and 91 were reached by one each; 83 was reached by two; 84, by two; 85, by two; 86, by four; 87, by six; 88, by eight; 89, by five; 90, by three; 92, by three.		
Toledo Med. Coll.	(1905) 82, 84, 85, 86, 86,	87
Western Med. Coll., London, Ont.	(1905)	84, 88
FAILED.		
College of Med. & Surg., Chicago	(1905)	73, 74
Illinois Med. Coll.	(1905)	65
Jenner Med. Coll.	(1905)	71
Physio-Medical Coll., Indianapolis	(1887)	56

The general average attained by all representatives of the

American College of Medicine and Surgery who passed was 81.4; by representatives of Bennett Medical College, 82.2; of the College of Medicine and Surgery, Chicago, 81.8; of the College of Physicians and Surgeons, Chicago, 84.2; of Hahnemann Medical College, Chicago, 82.3; of Illinois Medical College, 82.1; of Jenner Medical College, 81.2; of National Medical University, 79; of Northwestern University, 87.6; of Rush Medical College, 88.3.

Maine July Report.—Dr. W. J. Maybury, secretary of the Maine Board of Registration of Medicine, reports the examination, partly oral and partly written, held at Augusta, July 11-12, 1905. The number of subjects examined in was 10; total number of questions asked, 100: percentage required to pass, 75. The number of individuals examined was 44, of whom 41 passed and 3 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Boston University, (1904) 84.3, 89.8, 83.4; (1905) 80.1, 78.5, 81, 93.2, 84.6, 79.3, 87.6, 77.5, 87.4, 84.6, 80.7.		
Medical School of Maine (1905) 82.4, 75.5, 84.5, 86.6, 90.2, 82.8,		
College of P. & S., Boston	(1905)	80.2, 81.4
Jefferson Med. Coll	(1905)	79.3, 86.9, 78.3
Johns Hopkins University	(1905)	88.5
Albany Med. Coll	(1905)	87.2
McGill University	(1899)	77.2
Columbia University	(1892) 75; (1899)	93.2
University of Pennsylvania	(1905)	90.1, 78
Baltimore Med. Coll.	(1905)	86.8
Woman's Med. Coll., Philadelphia	(1905)	87.1
Harvard University	(1905)	81.1, 93
Medico-Chirurgical Coll., Philadelphia	(1905)	92, 83.5
University of Pennsylvania	(1905)	80.3, 90.6

The general average attained by all representatives of the Medical School of Maine who passed was 83.5.

New Hampshire July Report.—Dr. H. C. Morrison, regent of the New Hampshire State Board, reports the written examination held at Concord, July 7-8, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 20, of whom 15 passed and 5 failed. The following colleges were represented:

PASSED. Colleges.	Year Grad.	Per Cent.
Tufts Med. Coll.	(1902) 82;* (1905)	84
Dartmouth Med. Coll.	(1904) 76; (1905) 82, 87,	83
Harvard University	(1904) 82; (1905)	88
College of P. and S., New York	(1896) 80; (1905)	86
Jefferson Med. Coll.	(1905)	79
Detroit Coll. of Medicine	(1905)	77
McGill University	(1904)	81
Johns Hopkins University	(1904)	87
Maryland Med. Coll.	(1903)	75*
FAILED.		
Laval University	(1904) 61.5,* 73.8;* (1903)	62.1
Jefferson Med. Coll.	(1905)	73.9
Illinois Med. Coll.	(1902)	73.1

*Second Examination.

Ohio June Report.—Dr. T. Windero, secretary of the State Board of Medical Registration and Examination, reports the written examinations held at Columbus, Cleveland and Cincinnati, June 13-15, 1905. The total number of candidates examined was 192, of whom 188 passed and 4 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Miami Med. Coll. (1905). The grades of 94, 83 and 82 were reached by one each; 85, 84, 87, 80, 93, 90, 91 by two each; 88 was reached by three.		
Eclectic Med. Inst., Cincinnati (1881) 88; (1905). The grades of 77,* 83, 75, 85, 89 and 95 were reached by one each; 80 and 88 by two each.		
Fulte Med. Coll.	(1905)	85, 85.91
Medical College of Ohio (1905). The grade of 85 was reached by four; 86, by two; 87, by five; 88, by two; 89, by three; 90, by three; 91, by one; 92, by two; 93, by four; 94, by two.		
Western Reserve Univ. (1905). The grades of 87, 89, 93 and 97 were reached by one each; the grade of 88 was reached by four; 90, by two; 91, by two; 92, by four; 96, by two. The grade attained by one individual is not stated.		
Cleveland Homeo. Med. Coll. (1904) 85; (1905) 88, 83, 89, 90, 90, 85, 79, 92, 83, 98.		
College of P. & S., Cleveland. The grades of 81, 82, 84, 87, 90, 95 and 96 were reached by one each; 89 was reached by three; 91, by two, and 92 by two.		
Ohio Med. University (1905). The grades of 81, 78, 85, 82, 92, 97 and 91 were reached by one each; 84 was reached by five; 86, by two; 87, by two; 88, by four; 89, by four; 90, by four.		
Starling Med. Coll. (1905). The grades of 76, 77, 78, 79, 80, 86, 88, and 89 were reached by one each; 75 was reached by two; 81, by four; 83, by three; 84, by three; 85, by three; 87, by two; 90, by two.		
Hahnemann Med. Coll., Philadelphia	(1905)	90
Leonard Med. Coll.	(1905)	75
College of P. & S., New York	(1902)	92
Univ. of Mich. Homeo. Dept.	(1905)	88, 86, 90
Cincinnati Coll. of Med. & Surg.	(1901)	83
Queen's Med. Coll., Toronto	(1904)	81
Baltimore Med. Coll.	(1905)	89
Johns Hopkins University	(1902) 93, 90; (1905)	90
Harvard University	(1902)	83
University of Toronto	(1903)	90
Medico-Chirurgical Coll., Philadelphia	(1905)	96, 91
University of Michigan	(1905)	92
University of Pennsylvania	(1902)	75
Univ. and Bellevue Hosp. Med. Coll.	(1905)	85
Jefferson Med. Coll.	(1905) 83, 88, 89,	92
University of Buffalo	(1892)	88
Women's Med. Coll. of Penn.	(1905)	95
University of Iowa	(1905)	80
Detroit Coll. of Med.	(1893)	87
FAILED.		
Eclectic Med. Inst., Cincinnati	(1905)	—
Starling Med. Coll.	(1905)	—
Ohio Med. Coll.	(1905)	—

The general average attained by all representatives of Miami Medical College, who passed, was 87.3; of Eclectic Medical Institute, 84.3; of Medical College of Ohio, 85.8; of Western Reserve University (excepting one whose percentage is not stated), 91.1; of Cleveland Homeopathic Medical College, 86.1; of Cleveland College of Physicians and Surgeons, 82; of Ohio Medical University, 86.8; of Starling Medical College, 82.8.

*Second examination.

Pennsylvania Homeopathic Report for June.—The Homeopathic Medical Society of Pennsylvania reports the written examination held at Philadelphia, June 27-30, 1905. The total number of applicants examined was 36, all of whom passed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Hahnemann Med. Coll., Philadelphia, (1902) 76.28, 82.28, 92.28; (1905) 87.28, 89.28, 86.14, 94.14, 80.14, 92.42, 88, 92.57, 85.71, 88.57, 94.85, 87.57, 89.42, 93.14, 89.57, 84.85, 90.71, 94.71, 88.57 90.85, 88.57, 81, 92.57.		
Cleveland Homeo. Med. Coll. (1905) 93.14, 90.28, 88.28, 89, 57, 87.		
Southern Homeo. Med. Coll. (1904) 87.28;* (1905) 95.14, 92.14		
Dunham Med. College, Chicago	(1902)	90.28
Hering Med. College, Chicago	(1905)	92.71

The general average attained by all representatives of the Hahnemann Medical College of Philadelphia was 88.9.

*Second examination.

Pennsylvania Eclectic Report for June.—The Eclectic Medical Society of Pennsylvania reports the written examination, held at Harrisburg, June 27-30, 1905. The total number of candidates examined was 19, of whom 15 passed and 4 failed. The following colleges were represented:

PASSED. Colleges.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1905) 83.3,	80.6
Eclectic Med. Inst. Cincinnati	(1905) 78.4, 85.5	91.4
Eclectic Med. Coll. of Indiana	(1904)	80
Maryland Med. College (1904) 85;* (1905) 81.4, 82.3		80.4
Western Pennsylvania Med. Coll.	(——)	75.2**
Medico-Chirurgical Coll., Philadelphia	(1905)	82.8
Temple Med. Coll., Philadelphia	(1904)	75.7
University of Baltimore	(1904)	77.1*
FAILED.		
Baltimore Medical College	(1901)	72.3†
College of P. and S., Baltimore	(1904)	71.9††
University of Naples	(1894)	72.4
University of the South	(——)	67.4*

*Second examination.
**Seventh examination.
†Ninth examination.
††Third examination.

Rhode Island July Report.—Dr. Gardner J. Swartz, secretary of the Rhode Island State Board of Health, reports the examination held at Providence, July 11, 1905. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The number of applicants examined was 33, 28 of whom passed, and 5 failed. The following colleges were represented:

PASSED. Colleges.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1905) 87,	87.4
Bellevue Hosp. Med. Coll.	(1905)	78.1
College of P. and S., Baltimore	(1905) 75.5,	76.2, 79.1
College of P. and S. Boston	(1905) 75,	85.9
College of P. and S., New York	(1896)	83
Cornell University	(1905)	80.6
Harvard University	(1905) 84.4,	76.6
Jefferson Med. Coll.	(1905)	90.1
Long Island Coll. Hosp.	(1905)	75
Maryland Med. Coll.	(1904)	78.7
Syracuse University	(1904)	81.6
Tufts Coll. Med. Dept.	(1905) 80.6,	85.3
University Medical Coll.	(1879)	75
University of Maryland	(1905) 82.9,	75
University of Naples	(1899) 88.7,	78.9
University of Pennsylvania	(1903)	91
University of Vermont	(1898)	73
Woman's Med. Coll. of Pa.	(1901)	83.6
Yale University	(1905)	83.7
FAILED.		
Baltimore Med. Coll.	(1902)	62
Baltimore University	(1905)	61.6
College of P. and S. Boston	(—) 69.1; (1904)	62
Laval University	(1908)	60.6

Vermont July Report.—Dr. W. Scott Nay, secretary of the Vermont State Board of Medical Registration, reports the written examination held at Burlington, July 11-13, 1905. The number of subjects examined in was 12; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 32, all of whom passed. The following colleges were represented:

PASSED.	Year Grad.	Per Cent.
College.		
University of Vermont, (1905) 86.5, 86.2, 83.6, 82.5, 85.8, 83.2, 82.2, 88.2, 80.4, 81.11, 86.10, 84.7, 84.6, 82.5, 84.6, 84.11, 80.5, 85.11, 83.5, 86.8, 85.6, 85.		
Hahnemann Med. Coll., Philadelphia	(1905)	85.3
Dartmouth Med. Coll.	(1905)	85.9
College of P. and S., Baltimore	(1905)	87.7
Albany Med. Coll	(1905)	87.7
University of Maryland	(1905)	88.2
Kentucky School of Medicine	(1904)	82.11
Tufts Medical College	(1905)	83.2
Columbia University	(1905)	87.0
Baltimore Med. College	(1905)	84.7
Laval University	(1904)	77.6*

The general average attained by all representatives of the University of Vermont was 84.7.

* Second examination.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 12, 1905:

Skinner, George A., asst.-surgeon, left Fort Harrison, Mont., on practice march.

Mosely, E. B., deputy surgeon-general, left chief surgeon's office, Denver, on thirty days' leave of absence.

Yost, John D., asst.-surgeon, granted thirty days' leave of absence.

Bourke, James, asst.-surgeon, relieved from temporary duty at Fort McHenry, Md., and ordered to Fort Howard, Md., for temporary duty during the absence of Asst.-Surgeon Compton Wilson, on whose return to Fort Howard, Lieut. Bourke will return to duty at the Medical Supply Depot, New York City.

Kierstead, Henry S., asst.-surgeon, relieved from duty at Presidio of Monterey, Cal., and ordered to Fort St. Michael, Alaska, for duty.

Pierson, Robert H., asst.-surgeon, relieved from duty at Fort St. Michael, Alaska, and ordered to Fort Gibbon, Alaska, for duty.

Hathaway, L. A., asst.-surgeon, relieved from duty at Fort Gibbon, Alaska, and ordered to proceed to Seattle, Wash., and report by telegraph to the military secretary of the Army for further orders.

La Garde, Louis A., surgeon, leave of absence extended thirty days.

Bispham, William N., asst.-surgeon, in addition to his other duties at Fort Logan, Colo., is announced as temporarily in charge of chief surgeon's office, Department of Colorado, during the temporary absence on leave of Lieut-Col. Edward B. Moseley, deputy surgeon general.

Borden, William C., surgeon, granted thirty days' leave of absence about Aug. 8, 1905.

Smart, William M., asst.-surgeon, having reported arrival at Seattle, Wash., is assigned to duty at Fort Caswell, N. C.

Buck, C. D., asst.-surgeon, left with recruits from Jefferson Barracks, Mo., en route to Fort Walla Walla, Wash.

Marshall, John S., examining and supervising dental surgeon, relieved from duty at the Presidio of San Francisco, and assigned to duty at the Army General Hospital, Presidio of San Francisco.

Van Kirk, Harry B., contract surgeon, granted leave of absence for one month from Fort Sill, Okla.

Long, Charles J., dental surgeon, left Fort Yellowstone, Wyo., and arrived at Fort Lincoln, N. D., for duty.

George, William R. S., contract surgeon, arrived at New York City, and, having been relieved from duty in Porto Rico, proceeded to Fort Monroe, Va., for duty.

Vaughan, Milton, contract surgeon, left Fort Douglas, Utah, and arrived at Fort Crook, Neb., for duty.

Tukey, William H., contract surgeon, granted leave of absence for two months.

Warwick, Clarence A., contract surgeon, arrived at San Francisco, Cal., and availed himself of leave of absence for four months from the Philippines Division.

Brown, Wilmont E., contract surgeon, granted leave of absence for two months.

Suggs, Frank, contract surgeon, relieved from further duty in the Philippines Division, and ordered to duty at Fort Mansfield, R. I., at the expiration of his present sick leave of absence.

Slater, Ernest F., contract surgeon, returned from leave of absence to duty at Fort Hancock, N. J.

Clayton, George R., contract surgeon, ordered from Columbus Barracks, Ohio, to San Francisco, Cal., with recruits, and to proceed thence to the Philippines Division for duty.

Lauderdale, Clarence E., dental surgeon, granted leave of absence for one month.

Macy, Fred S., contract surgeon, returned to Allegheny Arsenal, Pa., from leave of absence.

Kierulf, H. Newton, contract surgeon, relieved from duty in the Department of California, and ordered to duty in the Philippines Division.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Aug. 12, 1905:

Wise, J. C., medical director, orders of July 29, 1905, modified; ordered to report to the Surgeon-General of the Navy, Aug. 10, 1905, for duty in command of the Naval Medical School.

Boyd, J. C., medical director, ordered to additional duty as president of the Naval Examining Board, and Naval Medical Examining Board, Naval Medical School, Washington, D. C.

Sellers, F. R., asst.-surgeon, U. S. Hathaway, appointed asst.-surgeons, with rank of lieutenant (junior grade), from Aug. 1, 1905.

Boratiing, L. W., surgeon, ordered to the Naval Station, New Orleans.

Taylor, J. L., asst.-surgeon, detached from the Naval Hospital, Pensacola, Fla., September 20, and ordered to Washington, D. C., October 2, for course of instruction at the Naval Medical School.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Aug. 9, 1905:

Irwin, Fairfax, surgeon, leave of absence for one month from Aug. 8, 1905, granted by Bureau letter of July 12, 1905, revoked.

Blue, Rupert, P. A. surgeon, to report at Washington, D. C., for special temporary duty.

Blue, Rupert, Currie, D. H., Greene, J. B., and McMullen, John, P. A. surgeons, and Rucker, W. C., Ebert, H. G., Smith, P. C., and Stoner, E. M., asst.-surgeons, to proceed to New Orleans and to report to Surgeon J. H. White for special temporary duty.

Lavinder, C. H., P. A. surgeon, to proceed to Fontainebleau, Miss., and assume command of detention camp.

Stanafield, H. A., P. A. surgeon, relieved from duty in the Canal Zone, and directed to proceed to New York and report arrival by wire.

Ameser, J. W., P. A. surgeon, to proceed to Cairo, Ill., and assume temporary command of the service.

Ashford, F. A., asst.-surgeon. Bureau order of August 7, directing to proceed to New Orleans revoked, and directed to proceed to Immigration Depot, New York, and report to Surgeon G. W. Stoner for duty.

McKeon, F. H., asst.-surgeon, relieved from duty at U. S. Marine Hospital, New Orleans, and directed to report to Surgeon J. H. White for special temporary duty.

Sweet, E. A., Sweet, W. H., and Mullan, R. H., asst.-surgeons, to proceed to New Orleans and report to Surgeon J. H. White for special temporary duty.

Frost, W. H., asst.-surgeon, to proceed to Norfolk, Va., and assume temporary charge of the service.

Olsen, E. T., asst.-surgeon, relieved from duty at Immigration Depot, New York, and directed to proceed to New York (Stapleton), and report to medical officer in command for duty and assignment to quarters.

Boyd, F., acting asst.-surgeon, granted leave of absence for thirty days from Aug. 1, 1905.

Hunter, S. B., acting asst.-surgeon, granted leave of absence for thirty days from Aug. 1, 1905.

Keatley, H. T., acting asst.-surgeon, granted leave of absence for two days from Aug. 6, 1905, under the provisions of Paragraph 210 of the Regulations.

Safford, M. V., acting asst.-surgeon, granted leave of absence for four days from Aug. 4, 1905, under the provisions of Paragraph 210 of the Regulations.

Stewart, W. J. S., acting asst.-surgeon, granted leave of absence for thirty days from Oct. 1, 1905.

Tarbell, B., acting asst.-surgeon, granted leave of absence for five days from Aug. 20, 1905.

Townsend, W., acting asst.-surgeon, granted leave of absence for five days from Aug. 7, 1905.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the period from July 29 to Aug. 5, 1905:

SMALLPOX—UNITED STATES.

California: Los Angeles, July 15-22, 2 cases.
Illinois: Chicago, July 22-27, 6 cases.
Louisiana: New Orleans, July 15-29, 1 case, 4 deaths.
Michigan: Grand Rapids, July 22-28, 5 cases.
Missouri: St. Joseph, July 15-22, 1 case.
Montana: Butte, July 15-23, 2 cases.
New Hampshire: Nashua, July 15-22, 1 case.
Ohio: Cincinnati, July 21-28, 2 cases; Toledo, July 15-22, 6 cases.
Pennsylvania: York, July 22-29, 1 case.

SMALLPOX—FOREIGN.

Argentine: Buenos Ayres, April 1-30, 43 deaths.
France: Paris, July 8-15, 6 cases, 2 deaths; St. Etienne, June 1-30, 2 cases.
Great Britain: London, July 8-15, 1 case.
India: Bombay, June 27-July 4, 7 cases; Karachi, June 25-July 2, 2 cases; Madras, June 24-30, 2 cases.
Russia: Moscow, July 1-8, 11 cases, 20 deaths; Odessa, June 17-July 15, 26 cases, 3 deaths; St. Petersburg, July 1-8, 5 cases, 3 deaths.
Spain: Barcelona, July 10-20, 4 deaths.
Turkey: Constantinople, July 8-16, 5 deaths.

YELLOW FEVER—UNITED STATES.

Louisiana: Morgan City, July 3, 1 case; Shreveport, Aug. 1, 1 case; New Orleans, July 21-Aug. 3, 208 cases, 59 deaths.
Mississippi: Gulf Quarantine, July 22-Aug. 3, 14 cases, 1 death; Lumberton, July 28, 1 case; Sumrall, Aug. 2, 1 case.

YELLOW FEVER—FOREIGN.

Brazil: Sao Paulo, June 15, 1 case.
Ecuador: Guayaquil, June 27-July 4, 2 deaths.
Guatemala: Livingston, July 8-15, 3 cases.
Honduras: Puerto Cortez, June 14-21, 2 deaths.
Mexico: Tierra Blanca, July 16-22, 1 case, 1 death; Vera Cruz, July 16-29, 2 cases.
Panama: Colon, July 10-17, 1 case; Panama, 9 cases, 3 deaths.

PLAGUE.

China: Hongkong, May 13-20, 20 cases, 18 deaths.
India: General, June 10-17, 5,413 cases, 4,883 deaths; Bombay, June 24-July 4, 88 deaths; Karachi, June 25-July 2, 34 cases, 34 deaths; Madras, June 24-30, 1 death.
Japan: Formosa, June 20-30, 39 cases, 40 deaths.
Peru: Callao, June 11-20, 1 case, 1 death; Lima, June 11-20, 3 cases, 1 death; Mollendo, June 11-20, 2 cases, 1 death; Payta, June 11-20, 2 cases, 1 death.
Straits Settlements: Singapore, June 10-17, 2 deaths.

CHOLERA.

India: Madras, June 24-30, 1 death.

MEDICAL SCHOOLS OF THE UNITED STATES

Below is given a brief description of every college in the United States that is legally chartered to confer the degree of doctor of medicine, and whose diploma is recognized by at least one state licensing board. The list includes the sectarian as well as the regular colleges, as their graduates are physicians in the eyes of the law. The information given is, as a rule, obtained from the catalogues and has been submitted to the dean of each school for his inspection and approval. Colleges which belong to the American or the Southern Medical College Association or other organization of colleges have requirements for admission of students according to the rules of these associations, unless their requirements are higher, in which case a statement is made to that effect. Extracts from these rules are given at the close of the list of colleges.

ALABAMA.

Alabama, population 1,828,697, has two medical colleges, the Medical College of Alabama and the Birmingham Medical College, located in Mobile and in Birmingham. The population of each city is over 38,000, and board and room may be obtained from $12 to $20 per month.

Birmingham.

BIRMINGHAM MEDICAL COLLEGE.—This school was incorporated in 1894 and is situated in Birmingham, a manufacturing town of 38,415. The clinical advantages are good. The Hillman, St. Vincent's, Pratt and County hospitals are accessible to the students. The laboratories are well equipped. There are 17 professors and 12 assistants, total 29. The school is a member of the Southern Medical College Association. The course of instruction embraces four separate sessions of six months each. The fees are $75 for each of the first three years and $100 for the fourth. The Dean is Dr. B. L. Wyman. Registration, 1904-5, 75, graduates, 16. Next session opens Oct. 3, 1905, and closes April 1, 1906.

Mobile.

MEDICAL COLLEGE OF ALABAMA.—This is the Medical Department of the University of Alabama, organized in 1859. The City Hospital furnishes free clinical material. The faculty consists of 8 professors and 12 lecturers, 20 in all. It is well equipped with building, laboratories, dispensary, etc. It is a member of the Southern Medical College Association. The course of study covers four years of six months each. The total fees for each of the first three years is $100; for the fourth year, $125. The Dean is Dr. George A. Ketchum. Total registration, 1904-5, 170; graduates, 41. The fortieth session will begin Oct. 1, 1905, and will close April 10, 1906.

ARKANSAS.

Arkansas, population 1,311,564, has one medical college, located in Little Rock. Board and lodging costs from $13 to $18 per month.

Little Rock.

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT.—This college is located at Little Rock, population about 60,000. It was organized in 1879 as the Arkansas Industrial University Medical Department. Hospital facilities are furnished by Logan H. Roots Memorial Hospital, St. Vincent's Infirmary and Pulaski County Hospital, the latter having a capacity of 200 beds. The teaching body consists of 13 professors and 20 lecturers and assistants, total 35. Dr. F. L. French, Little Rock, is Secretary. The fees are: Matriculation $5, paid but once; annual fees $60, and graduation $25. Total number of students at last session, 220; graduates, 32. The next course of lectures begins Oct. 16, 1905, and ends April 14, 1906.

CALIFORNIA.

California, population 1,485,053, has eight medical colleges. Five are located in San Francisco, a city of about 400,000 inhabitants. They are Cooper Medical College, Medical Department of the University of California, California Medical College, Hahnemann Medical College of the Pacific, and the College of Physicians and Surgeons. The clinical facilities of San Francisco are good; board and lodging can be obtained for from $20 to $30 a month. The College of Medicine of the University of Southern California is situated in Los Angeles, population 102,479. Board and lodging can be obtained in that city for $4 a week and upward. The Oakland College of Medicine and Surgery is in Oakland.

Oakland.

OAKLAND COLLEGE OF MEDICINE AND SURGERY.—The fourth session of this school will begin Aug. 15, 1905, and end May 15, 1906. The length of the course has been changed from eight to nine months, beginning with the sessions of 1905-6. The Registrar is Dr. Edward N. Ewer. The faculty numbers 28. Tuition is about $113 yearly. There were 12 students last session, divided the first three years. There has not been a graduating class as yet.

San Francisco.

COOPER MEDICAL COLLEGE.—This school was organized in 1858, though its present name was not adopted until 1882. The faculty consists of 17 professors and 44 lecturers, instructors, etc., 61 in all. Lane Hospital, adjoining the college, the City and County Hospital, containing 464 beds, and the college dispensary furnish clinical material. The requirements for admission are a certificate showing that applicant has passed the regular examination for admission to the University of California, or its equivalent, or graduation from an accredited high school or academy, or its equivalent. The college itself does not hold entrance examinations. The college building supplies large laboratory and lecture-room facilities. The curriculum covers a graded course of four years of eight and a half months each. Fees: Matriculation, $5; course fee for each year, $150; laboratory fee for each year, $10; breakage deposit each year, $10; graduation fee, $25; no other charges. The Dean is Dr. Henry Gibbons, Jr. Total registration for 1904-5 was 125; graduates, 37. The next session opens Aug. 15, 1905, and will close May 10, 1906.

UNIVERSITY OF CALIFORNIA, MEDICAL DEPARTMENT.—This department of the State University was organized in 1872, and has a faculty composed of 20 professors, 20 associates and assistants, a total of 59. The City and County Hospital, which admits students of this school not only to the clinics proper, but also to its wards for study, and the college dispensary furnish good clinical material. The course covers graded work for four years of nine months each. This school is a member of the Association of American Medical Colleges. In 1905 two full college years' work will be required of all applicants for admission. The fees are: Matriculation, $5; tuition, $150 each year; laboratory fees extra. The Dean is Dr. Arnold D'Ancona. Total registration for 1904-5 was 164; graduates, 17. The thirty-third session opens Aug. 15, 1905, and will close May 15, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS OF SAN FRANCISCO.—This school was organized in 1896 and has a faculty of 22 professors and 20 associate professors and teachers, a total of 42. The hospital facilities consist of the City and County Hospital, the California General Hospital, with 50 beds, and St. Winifred Hospital, with 50 beds. The daily clinics at the new college building furnish abundant material of every description. Applicants for matriculation must show an equal amount of work done or pass a satisfactory examination in English, history and government, geography, physics, mathematics and Latin, grammar and translation. The college building recently completed is well supplied with laboratories and lecture rooms. This college now conducts a continuous course of medical instruction. Each year is divided into four quarters of three months each, and known as the autumn, winter, spring and summer quarters. Students may enter at the beginning of any quarter. Attendance on 12 quarters will be required, and at least 45 months must elapse between the beginning of the first course and the time of graduation. Fees, $30 per quarter. The Dean is Dr. D. A. Hodghead. Registration for 1904-5 was 144; graduates, 29. The autumn quarter opens Sept. 1, 1905, and closes May, 1906.

HAHNEMANN MEDICAL COLLEGE OF THE PACIFIC.—Homeopathic. This school was organized in 1884, and has a faculty of 19 professors and 23 lecturers, instructors, etc., in all 42. The Pacific Homeopathic Polyclinic, the Homeopathic Sanatorium, the San Francisco Nursery for Homeless Children, Marie Kip Orphanage, accommodating, respectively, 45, 75 and 120 beds; Fabiola Hospital and the City and County Hospital, furnish the clinical material for study. Matriculants must possess the equivalent of a high school education. One year after entrance is permitted in which the student may complete conditions in Latin. The college is registered and accredited with New York State Regents and the Illinois and Michigan State Boards of Health. The course includes four years of seven months each. Total fees for the first year, $155, and $100 for each of the other three years. The Dean is Dr. James W. Ward, 606 Sutter St., San Francisco. Total registration for 1904-5 was 34; graduates, 10. The twenty-third session begins Sept. 1, 1905, and will close May 1, 1906.

CALIFORNIA MEDICAL COLLEGE.—Eclectic. This school was organized in 1884 and has a faculty of 19 professors and 25 lecturers, and instructors, a total of 26. The clinical material is supplied by the Buena Vista and City and County hospitals. Applicants for admission not holding diploma or certificate are examined. The course has been extended to cover four years of eight months each. Total fees are about $110 for each of the first three years and $40 for the fourth year. The Dean is Dr. D. Maclean. Total registration for 1904-5 was 40; graduates, 8. The next session begins Oct. 2, 1905, and ends May 16, 1906.

Los Angeles.

UNIVERSITY OF SOUTHERN CALIFORNIA COLLEGE OF MEDICINE.—This school was organized in 1885, and has a faculty of 29 professors and 19 instructors, 48 in all. The County Hospital, having 200 beds, the Sisters' Hospital of 150 beds, the Children's Hospital of 20 beds, and a college dispensary furnish clinical material. Applicants for admission must give evidence of matriculation in a university or graduation from an accredited high school, academy, preparatory school or a California State Normal School, or a certificate from an appointed member of a high school faculty that applicant has filled the requirements of the Association of American Medical Colleges, of which this college is a member. This college gives no admission examinations. The building is provided with laboratories, amphitheater and lecture rooms, and a new clinical laboratory, erected in 1904, costing, with equipment, $20,000. A graded course, covering four years of thirty-two weeks each, is

offered. The total fees for the first year are $145; second and third, $150 each, and $40 for the fourth year. The Dean is Dr. Walter Lindley. Total registration for 1904-5 was 115; graduates, 24. The next session opens Oct. 5, 1905, and closes June 16, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1903. The length of each course is eight months. The faculty numbers 30 in all, 21 professors and 9 assistants. The registration for 1904-5 was 25; graduates, 13. The next session begins Oct. 4, 1905, and ends June 4, 1906. The Secretary is Dr. Benjamin F. Church, Frost Bldg., Los Angeles.

COLORADO.

Colorado, with a population of 539,700, has three medical colleges. Two of these, Denver and Gross College of Medicine and Denver Homeopathic College are in Denver, which has a population of about 175,000, the other, the Colorado School of Medicine, is at Boulder (population 6,150). The clinical facilities in Denver available to the two colleges are the Denver County Hospital, which has a capacity of 300 beds. St. Joseph's Hospital, with 300 beds, and St. Luke's Hospital, with 75 beds. The Public Library contains 10,000 volumes on medicine. Board can be obtained in Denver for $5 a week and upward.

Denver.

THE DENVER AND GROSS COLLEGE OF MEDICINE.—This is the Medical Department of the University of Denver, and was organized in 1902 by the union of the Gross Medical College (organized 1887) and the Denver College of Medicine (organized 1880). The clinical advantages are the college dispensary, the Denver County Hospital, St. Luke's Hospital, St. Anthony's Hospital, St. Joseph's Hospital, National Jewish Hospital for Consumptives, Home for Dependent Children and the City Contagious Hospital and Mercy Sanitarium. The faculty is made up of 38 professors, 43 assistants and instructors, a total of 81. Its location is central, and the buildings are well arranged for laboratory, dispensary and clinic work. The course is graded and covers four years of eight months. The college is a member of the Association of American Medical Colleges. Final examinations at the end of each year are held. Fees for the first year are $115. For the second year, $116. Third year, $101. Fourth year, $96. Total registration for 1904-5 was 115; graduates, 32. The twenty-fourth session will begin Sept. 10, 1905, and close May 18, 1906. The Dean is Dr. S. G. Bonney.

DENVER HOMEOPATHIC COLLEGE.—This college, organized in 1894, beside clinical privileges in the hospital of the city and county of Denver, has exclusive privileges for clinical work in the Denver Homeopathic Hospital, the Haven and the Belle Lepox Nursery. The faculty numbers 26 professors and 7 lecturers and instructors, 33 in all. The requirements for admission are, "possession of a diploma from a literary college, university, an academy, a normal or high school; a first-grade teacher's certificate, or a previous matriculation at some reputable literary or medical college." The course of study consists of four years of seven months each; monthly examinations are held in each subject. A five-year scholarship may be had for $500 payable in advance, otherwise the tuition is $100 a year for the first, second and third years. Senior year, $75. There is a matriculation fee of $5, payable once. The Dean is Dr. James P. Willard. Total registration for 1904-5 was 20; the number of graduates, 6. The eleventh session begins in September, 1905, and will close April, 1906.

Boulder.

COLORADO SCHOOL OF MEDICINE.—This is the Medical Department of the University of Colorado, and was opened in 1883. The University Hospital, under the control of the state, is equipped to accommodate 40 patients, and furnishes free clinical material. Both hospital and dispensary clinics are offered and the sanatorium located at Boulder offers additional advantages in this line. The faculty embraces 9 professors and 9 lecturers and assistants, a total of 27. The laboratories are well equipped and commodious. A separate building is devoted to the study of anatomy and another one is used for medical work exclusively. A complete four-year course of study in a recognized high school, or its equivalent, is required for admission. This school is a member of the Association of American Medical Colleges. The work embraces a graded course of four years of nine months each. The tuition is $50 per year; there are no other fees. The Dean is Dr. Luman M. Gillis. Total registration for 1904-5 was 54; graduates, 8. The twenty-fourth session begins Sept. 11, 1905, and closes June 7, 1906.

CONNECTICUT.

Connecticut, with a population of 908,420, has only one medical college, located in New Haven, population, 115,000. Board and lodging cost $4.50 and upward per week.

New Haven.

YALE MEDICAL SCHOOL.—This is the Department of Medicine of Yale University. In 1810 a charter was granted for the establishment of this school, and in 1813 it was organized as the Medical Institution of Yale College. In 1879 a new charter changed the name to the one now used, and in 1884 the Connecticut Medical Society, which, from the granting of the first charter, had taken an active part in its control, surrendered its authority, and the University authorities assumed full control. The clinical advantages are embraced under the New Haven Hospital, which contains 175 beds and is the general hospital for New Haven; the Springside Hospital, which is connected with the city almshouse, and the State Hospital for the Insane, located in Middletown, about twenty-five miles distant, which, with its 1,800 patients, offers an opportunity for special instruction in insanity in addition to the clinics. Beside these, the University has just completed a $100,000 building for the dispensary service, which offers good material for clinical teaching. The faculty embraces 34 professors, 5 lecturers, 10 instructors and 19 assistants, a total of 48. The lecture rooms and laboratories are large and well equipped. Matriculants are admitted without examination, provided that they have received a degree in arts or sciences, that they present certificates showing that they have successfully prosecuted the subjects of the examination at some college, high school, academy or preparatory school approved by the faculty, or that they have passed matriculation examinations equivalent to those required at some approved professional school. This school is a member of the Association of American Medical Colleges. The course covers a four-year graded curriculum, nine months constituting a school year; the first two years the fundamental branches are studied, the third year is devoted to a systematic teaching of medicine, surgery, obstetrics and pharmacology, and in the fourth year clinical work, with medicine, surgery and the specialties, is presented. The fees are $150 each year; in the first year there are additional fees amounting to $18, and in the second, $8, and there is a graduation fee of $10. The Dean is Dr. Herbert E. Smith, New Haven. During the session of 1904-5 there were 139 matriculants and 22 graduates. The ninety-third session opens Sept. 28, 1905, and closes June 27, 1906.

DISTRICT OF COLUMBIA.

Washington, population 278,718, has three medical colleges: George Washington University Department of Medicine, Georgetown University School of Medicine, and Howard University Medical Department. Washington offers to the student of medicine many advantages. The Army Medical Museum, the Museum of Hygiene, the National Museum, the library in the Surgeon-General's office, the Toner Medical Library and Museum of Hygiene, in all over 125,000 volumes on medicine, open to the medical student a most profitable field. The clinical advantages offered by the various hospitals are good. Owing to the many boarding houses and hotels, board and lodging can be had at reasonable rates.

Washington.

THE GEORGE WASHINGTON UNIVERSITY, DEPARTMENT OF MEDICINE.—This school was organized in 1821 as the Department of Medicine of Columbian College, which in 1873 became Columbian University, and in 1904, by an act of Congress, changed its name to the George Washington University. In connection with the Department of Medicine is the University Hospital, established and maintained to afford clinical facilities for the students of the school. Beside the University Hospital, the Garfield Hospital, the Children's Hospital, the Central Dispensary and Emergency Hospital, the Providence Hospital, the Columbia Hospital, the Episcopal Eye and Ear Hospital, the U. S. Government Hospital for the Insane, and the Lutheran Eye and Ear Infirmary afford additional opportunities and are utilized for clinical instruction under the supervision of those members of the faculty who are on the visiting staffs of these institutions. Attendance on clinics is obligatory on third and fourth-year students. The faculty is composed of 34 professors and 30 demonstrators, instructors and assistants. This school is a member of the Association of American Medical Colleges. The laboratories are modern and equipped with all the needed apparatus for thorough work and instruction. Facilities are also provided for post-graduate and research work. The course of instruction is graded and extends through four years, each scholastic year consisting of eight months. Written and practical examinations are held during the term and written and oral in all subjects at the end of the school year. The total fees for the first year are $142; for the second year, $117; for the third year, $112, and for the fourth year, $122. A breakage deposit of $10 is required. The Dean is Dr. Frank P. R. Phillips, 1607 16th St. N. W. New and commodious buildings were occupied and occupied in 1904. The total registration of students for the session of 1904-5 was 296; graduates, 69. The eighty-fourth session begins Sept. 27, 1905, and closes June 6, 1906.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE.—This school organized in 1851, controls the Georgetown University Hospital, which affords excellent facilities for clinical teaching and ward classes. Clinics are also held for the benefit of the students in Providence Hospital, containing 500 beds, at the Government Hospital for the Insane, containing over 2,000 beds; in the Children's Hospital, the Central Dispensary, Emergency Hospital and the Garfield Hospital. Attendance on clinical instruction is obligatory in the third and fourth years. The faculty contains 26 professors, 27 instructors and assistants, total 53. This school is a member of the Association of American Medical Colleges. The building is conveniently located and contains spacious and well-ventilated lecture rooms, laboratories and library; the laboratories are equipped with the most approved instruments and appliances. The complete course of study extends over four terms of eight months each. Examinations are held at the end of each session. The fees are $110 each year. The Dean is Dr. George M. Kober, 1600 T St. The registration for 1904-5 was 127; graduates, 16. The next term opens on Sept. 28, 1905, and ends May 31, 1906.

HOWARD UNIVERSITY MEDICAL DEPARTMENT.—This institution was organized in 1867, and "in conformity with the spirit of the organic law of the University, is open to all, without regard to sex or race, who are qualified by good moral character, proper age and suitable education." The removal of any racial distinction has been taken advantage of by colored students, who compose a majority of those in attendance, but a number of white students are also receiving instruction. The Freedman's Hospital is a general hospital of 300 beds. The faculty comprises 17 professors and 16 lecturers and assistants, 33 in all. This college is a member of the Association of American Medical Colleges. Students are required to attend four courses of lectures in separate years of nine months each. The fees of each session are $80, plus $2 per part for dissecting material, and $10 for graduation. Board can be had at the school dining hall for $9 a month, and a room in the dormitory for $15 a term. The Dean is Dr. Robert Reyburn, 2129 P St. Registration for 1904-5 was 153; graduates, 32. The thirty-eighth session begins Oct. 2, 1905, and closes June 1, 1906.

GEORGIA.

Georgia, population 2,216,331, has three medical colleges: Medical College of Georgia, located in Augusta (population 39,441); Atlanta College of Physicians and Surgeons, and Georgia College of Eclectic Medicine and Surgery, both in Atlanta (a manufacturing city of 89,872 population). Board and lodging may be obtained for from $3 to $5 per week.

Augusta.

UNIVERSITY OF GEORGIA MEDICAL DEPARTMENT.—This school was organized as a medical academy in 1829, and in 1873 was made the Medical Department of the University of Georgia. Its faculty includes 12 professors and 13 assistants, 25 in all. The course is four years of six months each. Applicants for admission must, by examination, certificate or diploma, show that they possess educational qualifications equal to those required for second grade teachers in public schools; if they are deficient on examination, however, they are admitted, and they may remove the conditions any time before they appear for graduation. The City Hospital, with 130 beds; Lamar Hospital, with 80 beds; the Polyclinic and the Hospital for Contagious Diseases supply clinical material. Fees for the first two years are $75 each; third year, $100, and $130 for the last year. The Dean is Dr. DeSaussure Ford. Total enrolment for 1904-5 was 108; graduates, 14. The seventy-fourth session begins Oct. 1, 1905, and closes April 1, 1906.

Atlanta.

ATLANTA COLLEGE OF PHYSICIANS AND SURGEONS.—This school was formed in 1898 by the consolidation of the Atlanta Medical College, organized in 1854, with the Southern Medical College, organized in 1879. It has a faculty of 13 professors and 30 assistants, a total of 43. Clinical facilities are furnished by the Grady Hospital, which is the general hospital for Atlanta, clinics are free to the graduating class. First course students are required to "give satisfactory evidence to the faculty of such educational qualifications as will be deemed necessary for the successful prosecution of their medical studies. These requirements will be similar to those of other reputable medical colleges in the country." The course of study covers four years of six months each and is graded. The buildings are large and a new building for practical anatomy has been added. Fees: First and second years, $75 each; third and fourth, $100 each. The Dean is Dr. W. S. Kendrick, 71 Washington St. Total registration of students for 1904-5 was 250; graduates, 48. Next session begins Oct. 4, 1905, and closes April 5, 1906.

GEORGIA COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school was organized in 1839, and has a faculty of 16. The college dispensary, Grady Hospital and Georgia Eclectic Hospital furnish clinical material. Applicants for admission must adhere to the requirements established in the National Confederation of Eclectic Colleges, of which this college is a member. The curriculum covers four years of six months each. The Proctor is Dr. W. M. Durham, 77½ Peachtree St. Total number of students for 1904-5 was 53; graduates, 14. The next session opens Oct. 4, 1905, and closes April 4, 1906.

ILLINOIS.

Illinois, population, 4,821,550, has 13 medical colleges, all located in Chicago, a city of about 2,000,000 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, Hahnemann Medical College, Bennett College of Eclectic Medicine and Surgery, College of Physicians and Surgeons, Hering Medical College, Jenner Medical College, Illinois Medical College, American Medical Missionary College, College of Medicine and Surgery, National Medical University, American College of Medicine and Surgery, and Dearborn Medical College. Room and board cost $3 a week and upward.

Colleges in Illinois have to admit students in conformity with the minimum requirements of the Illinois State Board of Health, as follows: "A diploma or certificate of graduation from a high school; or a certificate signed by a principal of a regularly organized high school or by the examiner of the faculty of a recognized literary or scientific college or university, or by the state superintendent of public instruction, or a superintendent of public schools, of having successfully passed an examination in all the several branches embraced in the curriculum of a four years' high school course. The matriculation examination shall not be conducted by any member of the faculty of the medical college. The Illinois State Board of Health will require each applicant for a state certificate to present documentary evidence of his preliminary education, together with his medical diploma, when taking the examination of the board." These conditions will govern all persons admitted to the freshman year on or after Jan. 1, 1903.

Chicago.

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 to 1898, and in the latter year became affiliated with the University of Chicago. The faculty is composed of 64 professors, 170 associates, instructors, etc., a total of 234. Good clinical facilities are furnished by Cook County Hospital, caring for about 20,000 patients yearly; Presbyterian Hospital, with 250 beds; a college dispensary, and an obstetric department. In addition to these, extramural clinical courses are offered at the West Side Hebrew Dispensary, St. Luke's Hospital, St. Anthony's Hospital, the Alexian Brothers' Hospital, Illinois Charitable Eye and Ear Infirmary and Chicago Isolation Hospital. Bedside instruction is given. The requirements for admission are those of admission to the better universities or colleges, and, in addition thereto, two years of college work. This college work must have included thorough courses in college chemistry (both inorganic and organic), college physics and biology, all with laboratory work, a reading knowledge of German and French. By the addition of a recently completed seven-story building, the facilities for clinical instruction are largely increased. The laboratories and their equipment are unexcelled. The curriculum covers graded work for four years of three quarters each, a quarter being three months. A fifth year, consisting of a hospital internship or of a fellowship in one of the departments is offered, but, for the present, is optional. A continuous session is held, but credit for more than three quarters can not be obtained in any calendar year. A combined course for six years confers degrees of both science and medicine. All freshmen and sophomore studies are given at the University of Chicago. The total fees are $180 this year. Students in continuous attendance, i. e., three quarters in twelve months, may complete their course by paying the fees in vogue when they first entered the college. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $2 to $5 annually. The Deans are Dr. Frank Billings, 100 State St., and Dr. John M. Dodson, 34 Washington St. Total registration, 1904-5, was 522; graduates, 112. The fiscal year begins July 1; final examinations are held at the end each quarter.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1881, and in 1896 became the Medical Department of the University of Illinois. The faculty is composed of 39 professors, 105 assistants and instructors, a total of 144. The West Side Hospital, containing 125 beds; Cook County Hospital, and a college dispensary furnish clinic supply, most of the clinical material, but under certain conditions students of this school are admitted to the following hospitals for clinical study: Augustana, Baptist, Chicago, Woman's, Samaritan, Alexian Brothers', St. Mary's, and the Chicago Lying-In. This college is a member of the Association of American Medical Colleges. A magnificent building has recently been added to the college, and the laboratory, amphitheater and lecture-room space and equipment are excellent. The college year is divided into two terms; the work of the winter, thirty-six weeks and the summer term of twelve weeks, of actual teaching. Attendance on the winter term is required in order to secure credit for a year's work, and attendance on four winter terms is required for graduation. Attendance on the summer term is optional, and is not complementary to the work of the winter term. Students may obtain credit for work done in certain branches, but attendance on this term does not apply on the required thirty-six months' attendance necessary for graduation. The fees are $145 each for the first two years, $136 for the third and $125 for the fourth year. The Dean is Dr. William E. Quine, 103 State St. Total registration for 1904-5 was 654; graduates, 213. The fall term begins Sept. 26, 1905, and ends June 5, 1906.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL.—This school was organized in 1859 as the Medical Department of Lind University, became independent as the Chicago Medical College in 1864, and in 1869 assumed its present relation as Medical Department of Northwestern University. The faculty comprises 41 professors and 75 assistants and instructors, in all 116. Wesley Hospital, with 225 beds; Mercy Hospital, containing 400 beds; Provident Hospital, 100 beds; St. Luke's, 200 beds, and a college free dispensary furnish opportunities for clinical study to students of this college exclusively. Cook County, the People's, and the Chicago Lying-in hospitals are also open to them for study. Applicants for admission must, by diploma, certificate or examination, show possession of the educational requirements required to enter the College of Liberal Arts of Northwestern University. This school is a member of the Association of American Medical Colleges. The laboratory and lecture-room facilities are ample and the equipment is good. The course of study covers graded work for four years of thirty-six weeks each. Optional summer laboratory and clinical courses are also given. Final examinations are held at the end of each semester. The fees for each year are $125. A matriculation fee of $5, paid once, is charged. The Dean is Dr. N. S. Davis, Chicago Savings Bank Bldg. The total registration for 1904-5 was 593; graduates, 143. The next session opens Oct. 3, 1905, and closes June 1, 1906.

AMERICAN MEDICAL MISSIONARY COLLEGE.—This school was organized in 1895 and has the primal object of educating men and women as missionary physicians. The faculty numbers 26. The didactics and laboratory work, covering the first two years, are carried on at Battle Creek, Mich., and the clinical studies in Chicago. The hospital with 200 beds, in connection with the college, together with a free college dispensary with an obstetric department, supply material for practical work. The college is a member of the Association of American Medical Colleges. The course covers four years of nine months each. Total fees are $125 for each of the four years. The Secretary is Dr. E. L. Eggleston, Battle Creek, Mich. Total registration for 1904-5 was 80; graduates, 21. The eleventh session opens Sept. 20, 1905, and closes June 19, 1906.

ILLINOIS MEDICAL COLLEGE.—This school, organized in 1894, has a faculty of 31 professors and 20 assistants, a total of 51. A college dispensary and Cook County Hospital are available for clinical study. The requirements of admission include a high school diploma or its equivalent. The college is a member of the Association of American Medical Colleges. Attendance for seven months during each year is necessary for graduation. Total fees are about $125 for each year. The Dean is Dr. B. B. Eads, 103 State St. Total registration for 1904-5 was 192; graduates, 59. The next fall term begins Sept. 4, 1905.

DEARBORN MEDICAL COLLEGE.—This school was organized in 1903, with a faculty of 38 professors and 4 assistants, a total of 42. The instruction, which is given in the evening only, extends over a period of four years of ten months each. Cook County Hospital, Samaritan Hospital and a college dispensary supply the clinical material. The total fees are: $5 matriculation fee, $110 tuition, and $10 laboratory deposit. The Dean is Dr. L. Blake Baldwin; the Secretary, Dr. J. L. Wells. Total registration for 1904-5 was

181; graduates, 29. The next session begins Sept. 4, 1905, and ends June 23, 1906.

HAHNEMANN MEDICAL COLLEGE.—Homeopathic. This school was organized in 1855, and has a faculty of 104. Hahnemann Hospital and a college dispensary supply clinical material. The requirements for admission are a high school diploma or its equivalent. The course is four years of seven months each. Fees: Matriculation, paid once, $5; each semester, $50, and hospital tickets, $5 each for third and fourth years. The Registrar is Dr. W. Henry Wilson. Total registration 1904-5, 220; graduates, 61. The next session begins Sept. 27, 1905.

HERING MEDICAL COLLEGE.—Homeopathic. This school was organized in 1892. Dunham Medical College, organized in 1895, was consolidated with this school in August, 1902. In January, 1905, it purchased the Chicago Homeopathic College Building at 354 South Wood St., opposite Cook County Hospital, which it now occupies. The faculty comprises 40 professors and 25 associates, lecturers, etc., in all 65. Hering College Hospital, Chicago Homeopathic, Frances Willard and Cook County hospitals supply clinical facilities. The course covers four years of eight months each. The total fees for a full course are $300 if paid in advance, or $100 per year. The Dean is Dr. H. C. Allen. Total registration for 1904-5 was 50; graduates, 14. The fourteenth session begins Sept. 4, 1905, and ends May 3, 1906.

COLLEGE OF MEDICINE AND SURGERY.—Physio-Medical. This school was organized in 1896, and has a faculty of 48 professors and 14 assistants. A three college dispensaries supply material for clinical work. The course covers four years of nine months each, divided into 3 semesters of three months each. Fees for the first, second and third years, $100 each, and $115 for the fourth. The Secretary is Dr. Franklyn S. Morgan, 67 Wabash Ave. Total registration for 1904-5 was 80; graduates, 14. The next session begins Sept. 25, 1905, and ends June 28, 1906.

BENNETT COLLEGE OF ECLECTIC MEDICINE AND SURGERY.—This school, organized in 1868, has a faculty of 40 professors and 12 assistants, 52 in all. The Bennett, Cook County and Baptist hospitals and a college dispensary supply clinical facilities. Matriculants must present a diploma or certificate or pass a satisfactory examination "in conformity with the minimum requirements of the State Board of Health." This course covers four years of twenty-six weeks each. This school is a member of the National Confederation of Eclectic Medical Colleges. Fees for each year are $100, with a matriculation fee, paid once, of $5. The Dean is Dr. A. L. Clark, Elgin, Ill. Total registration, 1904-5 was 103; graduates, 30. The thirty-eighth session begins Sept. 26, 1905, and ends May 8, 1906.

AMERICAN COLLEGE OF MEDICINE AND SURGERY.—This school was founded in 1901 and has a faculty of 65. The requirements for entrance are graduation from an accredited high school or equivalent. The course is four years of eight months each. Frances E. Willard and Cook County hospitals supply clinical material. The Secretary is Dr. J. N. Roe. The annual fee is $100; matriculation fee is $5; a total fee for one year, with board, room, light and heat, is $208. The enrolment, 1904-5, was 202; graduates, 43. The next session begins Sept. 26, 1905, and closes May 18, 1906.

NATIONAL MEDICAL UNIVERSITY.—This school was organized in 1891, and its courses include instruction in the methods of all the so-called schools of practice, including manual therapeutics. The faculty numbers 66. The requirements for entrance are in accordance with the requirements of the Illinois State Board of Health. Each year is divided into four quarters of thirteen weeks each, attendance on three quarters constituting one college year. The fees are $200 per year. The Dean is Dr. L. D. Rogers, 532 Wells St. Total matriculants for 1904-5 were 232; graduates, 29. The autumn quarter will begin Oct. 1, 1905.

JENNER MEDICAL COLLEGE.—This is a day and evening school, organized in 1892. The faculty consists of 46 professors and 7 assistants, 53 in all. Cook County Hospital and college dispensary supply clinical material. The course covers four years of 40 weeks each and embraces laboratory, didactic and clinical instruction. The total fees each year are $100, with a $5 matriculation fee, paid but once. The Registrar is Dr. C. Shorman, 163 Randolph St. Total enrolment for 1904-5 was 102; graduates, 13. The next session begins Sept. 4, 1905, and will end June 29, 1906.

HARVEY MEDICAL COLLEGE.—This is a night school, which was organized in 1891 and became extinct in 1905. Total registration for 1904-5 was 210; graduates, 18.

INDIANA.

Indiana, population 2,516,462, has six medical colleges. Four are situated in Indianapolis, a city of 169,164 people: The Central College of Physicians and Surgeons, Medical College of Indiana, the Eclectic Medical College and the Physio-Medical College of Indiana. The clinical facilities of Indianapolis are good, and board and lodging can be obtained from $3 a week and upward. The Fort Wayne College of Medicine is situated in Fort Wayne, a railroad and manufacturing town of 45,115 inhabitants. Board and room can be obtained there at an average of $3 a week. The School of Medicine, Indiana University is situated in Bloomington, a city of 5,000.

Indianapolis.

CENTRAL COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1879 and reorganized in 1901. The faculty numbers 24 professors and 35 lecturers and demonstrators, total 59. A new college building has been erected in the center of the city on the most up-to-date plans. Its floor space comprises 25,000 square feet, more than half of which is devoted to laboratory teaching. The school gives instruction largely by laboratory and clinical methods. Clinical facilities are furnished by a dispensary maintained by the college, by the City Dispensary, City Hospital, St. Vincent's Infirmary and the Central Hospital for the Insane. Bedside clinics are given to sections of senior class daily at City Hospital. This college was a charter member of the Association of American Medical Colleges. The course is four years of seven months each. The Dean is Dr. George D. Kahlo; the Secretary, Dr. John F. Barnhill. The fees are $75 for each year. Total registration, 1904-5, was 146; graduates, 25. The session for 1905-6 will open Sept. 20, 1905, and closes April 20, 1906.

MEDICAL COLLEGE OF INDIANA.—This is the Medical Department of the University of Indianapolis, and was organized in 1869. The faculty embraces 25 professors, 38 adjuncts, lecturers, etc., a total of 63. The City Hospital, containing 200 beds; Indianapolis Dispensary; Central Hospital for the Insane, with a capacity for 1,800 patients; St. Vincent's and the Maternity hospitals, and a college dispensary provide clinical facilities; the wards in the charity hospitals are open to students of this college for bedside instruction. The laboratory and lecture-room space is ample. This college is a member of the Association of American Medical Colleges. The course extends over four years of seven months each. Fees, $75 for first, second and third years, and $100 for the fourth year, which includes graduation. The Dean is Dr. Henry Jameson, Newton-Claypool Bldg. Total enrolment for 1904-5 was 209; graduates, 78. The thirty-sixth session opens Sept. 14, 1905, and closes May 1, 1906.

ECLECTIC MEDICAL COLLEGE OF INDIANA.—This school was organized in 1900 and has a teaching force of 24. The course is four years of six months each. Fees: For each year, $75, or for all four, $225; $25 for graduation. Total registration, 1904-5, 44; graduates, 8. The Dean is Dr. W. M. Brown, 732 Sheffield Ave. The Secretary is F. M. Wright, M.D., 1120 East Tenth Street. The next session begins Sept. 26, 1905, and ends April 16, 1906.

PHYSIO-MEDICAL COLLEGE OF INDIANA.—This school was organized in 1879, and has a faculty of 20. The course is four years of seven months each. Total fees for each year are $70. The Secretary is Dr. C. T. Bedford, Newton-Claypool Bldg. Total enrollment, 1904-5 was 72; graduates, 5. The next session begins Sept. 13, 1905, and closes April 13, 1906.

Fort Wayne.

FORT WAYNE COLLEGE OF MEDICINE.—This school is the Medical Department of the Ohio Northern University, located at Ada, and was organized in 1879. It has a faculty of 27 professors and 9 lecturers and assistants, a total of 36. St. Joseph's Hospital, with a capacity of 250 patients; Hope Hospital, with 200 beds; St. Roche's Hospital, having accommodation for 35 patients; Indiana School for Feeble-Minded Youth and Allen County Orphan Asylum, capable of holding 150 children, supply the clinical facilities. This school is a member of the Association of American Medical Colleges. The curriculum covers four years of seven months each. The course is practical, supplemented by lectures and laboratory work. The total fees for each year are $75, with an additional $5 matriculation fee, payable once. The Dean is Dr. C. H. Stemen, 715 Broadway. Total registration, 1904-5, was 43; graduates, 6. The next session opens Sept. 12, 1905, and c oses April 18, 1906.

Bloomington.

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—This school was organized in 1903, and gives only the first two years of the medical course, extending over nine months in each year. The school is a member of the Association of American Medical Colleges. The faculty consists of 8 professors and 3 assistants, a total of 11. Dr. Burton D. Myers is the Acting Dean. The enrolment, 1904-5 was 14. The next session begins Sept. 18, 1905, and ends June 22, 1906.

IOWA.

Iowa, population, 2,231,853, has five medical colleges. The College of Medicine of the State University of Iowa and the College of Homeopathic Medicine of the State University of Iowa are located in Iowa City (population 10,000). In Des Moines (population 62,139) is the College of Medicine of Drake University. In Sioux City (population 33,111) is the Sioux City College of Medicine. In Keokuk (population 15,641) is Keokuk Medical College, College of Physicians and Surgeons. Board and lodging may be had in Des Moines for $15 a month and upward and in the other cities named for from $2.50 to $5 per week.

Des Moines.

DRAKE UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1882 under the name of the Iowa College of Physicians and Surgeons. In 1900 it became affiliated with Drake University. The faculty consists of 21 professors and 25 assistants, a total of 46. The Mercy and Methodist hospitals and a large dispensary clinic furnish clinical material. The college is a member of the Association of American Medical Colleges. The requirements for admission, after the 1st of July, 1905, will be a full four years' high school course or its equivalent. The work covers a graded course of four years of nine months each. The total fees for the first two years are $107 each, including laboratory and dissecting material; for the last two years, $80 each, including hospital fees. The Dean is Dr. D. S. Fairchild. The total registration for 1904-5 was 60; graduates, 12. The next session begins Sept. 18, 1905, and ends June 14, 1906.

Iowa City.

COLLEGE OF MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This department was organized in 1870. The faculty is made up of 15 professors, 34 lecturers, demonstrators and assistants, a total of 49. The University Hospital, built in 1897, at a cost of $50,000, supplies the clinical material. The school is a member of the Association of American Medical Colleges. The course of study covers four years of thirty-six weeks each, embracing graded laboratory, didactic and clinical work. New laboratories have been erected. histology, embryology, anatomy, physiology, pharmacology, pathology, bacteriology and clinical medicine. Combined courses leading to more than one degree are offered. Total fees for each year are $50. The Dean is Dr. James R. Guthrie, Dubuque; Secretary, Dr.

W. L. Bierring, Iowa City. Total number of students registered for 1904-5 was 277; graduates, 65. The thirty-sixth session opens Sept. 21, 1905, and ends June 13, 1906.

COLLEGE OF HOMEOPATHIC MEDICINE OF THE STATE UNIVERSITY OF IOWA.—This was organized in 1877. The faculty is composed of 12 professors and 12 lecturers and assistants, a total of 24, but some of these are of the faculty of the College of Medicine. The requirements for admission, and the work, with the exception of that pertaining to homeopathy, are the same as those for the other department. The fees are also the same. The Dean is Dr. George Royal, Des Moines. Total registration for 1904-5 was 41; graduates, 9. The twenty-ninth session begins Sept. 21, 1905, and will end June 13, 1906.

Keokuk.

KEOKUK MEDICAL COLLEGE, COLLEGE OF PHYSICIANS AND SURGEONS.—In 1849 the College of Physicians and Surgeons, Keokuk, was organized, and four years later it became the Medical Department of the University of Iowa, continuing as such until 1870, when the original name was resumed. By the union, in 1890, of this college with the Keokuk Medical College, organized in 1890, the present school under the above name was founded. The clinical material is good. St. Joseph's Hospital is open to the student for study and the clinics held there are large and varied. The faculty is composed of 17 professors and 3 assistants and demonstrators, 20 in all. This college is a member of the Association of American Medical Colleges. The studies embrace a graded course of four years of seven months each. The total fees for the first year are $63; for the second and third, $58 each, and $53 for the last year. The Secretary is Dr. C. E. Ruth. Total registration for 1904-5 was 230; graduates, 56. The next session begins Sept. 19, 1905, and ends April 24, 1906.

Sioux City.

SIOUX CITY COLLEGE OF MEDICINE.—This school was organized in 1891. The faculty numbers 26. Clinical material is supplied by St. Joseph's, Mercy and Samaritan Hospitals and a college dispensary. This college is a member of the Association of American Medical Colleges. The system of study embraces a four-year graded course, eight months being a school year. Final examinations are held at the close of each course of instruction. Matriculation fee, paid but once, $5; tuition, each year, $48; hospital fee, $5, and graduating fee, $20. The President is Dr. J. N. Warren. Total number of students registered, 1904-5, was 72; graduates, 14. The sixteenth session opens Sept. 13, 1905, and will close May 2, 1906.

KANSAS.

Kansas, population, 1,600,000, has two medical colleges: Kansas Medical College is in Topeka (population 33,608), and the College of Physicians and Surgeons, now a part of the University of Kansas, in Kansas City (population 55,000). In addition there is a school which does not grant degrees, but prepares students in the first two years. This is the Medical School of the University of Kansas, at Lawrence, a town of 10,862 people. Board and lodging in all these places may be had for $3 to $5 per week.

Lawrence.

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—This school was organized in 1880. The faculty numbers 18. This school is a member of the Association of American Medical Colleges. Only the purely preclinical subjects are taught in Lawrence, but the work in these is thorough, seventy-two weeks being devoted to the two-year course. The greater part of the work is done in the laboratory, with recitations and assigned readings, the lectures being supplementary only. For this reason the equipment and arrangement of the laboratories have been given special attention. A combined course of four years is offered, conferring "the degree of bachelor of arts in medicine." In the year 1905-6 the work will be entirely reorganized. The third and fourth years' work will be added, but will not be given at Lawrence. A hospital will be erected at Rosedale, Kan., a suburb of Kansas City, and the clinical work will be carried on at this place. The total fees to residents of the state are: First year, $25; second, $25; to non-residents of the state, $35, and afterward as to change in fees for next year. The Acting Dean is Dr. Geo. E. Hoxie. The number of students registered for 1904-5 was 32. The next session begins Sept. 6, 1905, and will end June 6, 1906.

Kansas City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This was organized in 1894 as the Medical Department of Kansas City University, and in 1903 was absorbed by the Medical Department of the University of Kansas. The total registration in 1904-5 was 55; graduates, 3.

Topeka.

KANSAS MEDICAL COLLEGE, MEDICAL DEPARTMENT OF WASHBURN COLLEGE.—This college, organized in 1890, has a faculty of 25 professors and 8 lecturers and assistants, 33 in all. Good material for both medical and surgical clinics is found in Christ's Hospital, with 100 beds, and Topeka State Hospital; the dispensary in the college building also supplies material for class demonstration. The college is a member of the Association of American Medical Colleges. The college building affords ample laboratory and lecture-room space. The course of study is a graded one, covering four years of 30 weeks each. Individual instruction is especially aimed at. The total fees for the first three years are $70 each, and $30 for the last year. The Dean is Dr. William S. Lindsay; Secretary, Dr. William McVey. The total registration for 1904-5 was 91; graduates, 18. The sixteenth session begins Sept. 13, 1905, and will close April 18, 1906.

KENTUCKY.

Kentucky, population 2,147,174, has seven medical colleges. They are all situated in Louisville, a city of about 225,000 inhabitants, and are as follows: University of Louisville Medical Department, Kentucky School of Medicine, Louisville Medical College, Hospital College of Medicine, Southwestern Homeopathic Medical College, Kentucky University Medical Department, and the Louisville National Medical College. Board and lodging in Louisville costs from $3 to $4 per week.

Louisville.

KENTUCKY SCHOOL OF MEDICINE.—This school was organized in 1850, and has a faculty composed of 20 professors, 27 lecturers, instructors and assistants, a total of 47. It is a lineal descendant of the Medical Department of Transylvania University, then situated at Lexington, Ky. The College Hospital, City Hospital and the college dispensary furnish the facilities for clinical study. The student is brought directly into contact with the patient through dispensary and bedside work by dividing the classes into sections. This college is a member of the Association of American Medical Colleges. The laboratories and their equipment are good. The curriculum embraces a four years' course of 28 weeks each. The fees for the first three years are $75 each; for the fourth year, $100. The Dean is Dr. Wm. H. Wathen, 628½ Fourth Ave. Total number of students registered for 1904-5 was 193; graduates, 49. The next session begins Dec. 15, 1905, and will end July 12, 1906.

LOUISVILLE MEDICAL COLLEGE.—This school was organized in 1869 and has a faculty of 15 professors and 18 instructors and assistants, 30 in all. The City Hospital, College Infirmary and a dispensary offer good clinical facilities. Applicants for admission must show by diploma, certificate or examination that they are sufficiently proficient in English, arithmetic, algebra, physics and such Latin as would be acquired in one year's study. The laboratories and lecture rooms are ample. The course of study covers four years of six months each. The fees are $75 each year, with graduating fee of $25. The Secretary is Dr. Irvin Abell. Total registration for 1904-5 was 283; graduates, 40. The next session opens Dec. 11, 1905, and closes July 1, 1906.

HOSPITAL COLLEGE OF MEDICINE.—This school is the medical department of Central University of Kentucky and was organized in 1873. The faculty is composed of 16 professors and 35 assistants, lecturers, etc., a total of 51. The Grace Street and City Hospital and a well-equipped college dispensary present good facilities for clinical study. This college is a member of the Association of American Medical Colleges. Laboratory work, which is a prominent feature of the course, is thorough and practical. The laboratories and amphitheaters are ample in equipment and capacity, and the hospital advantages give opportunity for personal bedside instruction. The course covers four years of seven months each. Total fees for each of first three years, $75, and $100 for the fourth year. The Dean is Dr. P. Richard Taylor. Total enrolment for 1904-5 was 423; graduates, 90. The thirty-second session opens Dec. 1, 1905, and closes July 1, 1906.

KENTUCKY UNIVERSITY MEDICAL DEPARTMENT.—This school was reorganized in 1898. The faculty is composed of 17 professors and 22 lecturers, demonstrators, etc., 42 in all. Broadway Infirmary, the City Hospital and the college dispensary furnish clinical material. The school is a member of the Association of American Medical Colleges. The buildings provide ample facilities for clinical, laboratory and didactic instruction. The course of study embraces graded work for four years of thirty weeks each. Tuition is $75 per session and $25 graduation fees. The Dean is Dr. Thomas C. Evans, 410 West Chestnut St. Total number of students registered in 1904-5 was 340; graduates, 76. The next session begins Jan. 1, 1906, and continues seven months.

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT.—This school was organized in 1837, under the name, Louisville Medical Institute, and in 1846 assumed its present title. It has a faculty of 11 professors and 27 lecturers, demonstrators, etc., a total of 38. The University Hospital, City Hospital, Red Cross and Elizabeth Hospital, together with the college dispensary, furnish good clinical material. The course covers graded work for four years of seven months each. Total fees: First year, $107; second, $122; third, $106, and fourth, $112. The Dean is Dr. J. M. Bodine. Total registration for 1904-5 was 248; graduates, 75. The sixty-eighth session begins Oct. 2, 1905, and ends May 1, 1906.

LOUISVILLE NATIONAL MEDICAL COLLEGE.—Colored. This was chartered in 1888 and shows a teaching force of 25. There is a four-year course, seven months to the year; the fees are $58, $58, $55 and $50 for the four years respectively. The Dean is Dr. E. S. Porter, Tenth and Walnut. The attendance 1904-5 was 37; graduates, 6. The next session opens Oct. 7, 1905, and ends May 17, 1906.

SOUTHWESTERN HOMEOPATHIC MEDICAL COLLEGE.—This college was organized in 1902, and has a faculty of 17 professors and 10 lecturers and assistants, 27 in all. A college dispensary supplies clinical material. The curriculum covers four years of seven months each. Total fees: First and second years, $80; third, $70, and $65 for the fourth. The Dean is Dr. A. L. Monroe. Total number of students for 1904-5 was 19; graduates, 6. Next session opens Sept. 26, 1905, and closes April 24, 1906.

LOUISIANA.

Louisiana, having a population of 1,381,625, contains two medical colleges: Medical Department of the Tulane University of Louisiana and New Orleans University. They are both situated in New Orleans, a city of 287,104 people. The cost of room and board is from $16 to $22 a month.

New Orleans.

FLINT MEDICAL COLLEGE OF NEW ORLEANS UNIVERSITY.—Colored. This school was organized in 1889. The faculty is made up of 7 professors, 4 lecturers and instructors, 11 in all. Clinical material is supplied by the Sarah Goodridge Hospital and by an outdoor clinic. This college is a member of the Association of American Medical Colleges. The curriculum covers a graded course of four years, thirty weeks each. The laboratories and lecture rooms are

ample. Examinations are held monthly. Total fees for the first, second and third year are $40 each, and $50 for the last year. The President is Dr. F. H. Knight, New Orleans. Total enrolment for 1904-5 was 55; graduates, 7. The sixteenth college year begins Sept. 26, 1905, and will end March 17, 1906.

MEDICAL DEPARTMENT OF THE TULANE UNIVERSITY OF LOUISIANA.—This school was organized in 1834 as The Medical College of Louisiana, and became, in 1847, the Medical Department of the University of Louisiana, and in 1884 the Medical Department of the Tulane University of Louisiana. The faculty and all other instructors number 49. By acts of legislature the Charity Hospital, with its 900 beds, has been opened to the students of this school, for clinical study, not only in medicine and surgery, but also in obstetrics and gynecology. In the year 1903 there were 8,813 cases treated in the wards of this hospital; these were indoor patients, and, in addition, 19,302 outdoor patients were treated in the free dispensary department. The Milliken Memorial Hospital, with a capacity for 200 children, is also available for study of clinical cases. Bedside instruction is given by the attending physicians to these hospitals, and postmortem examinations are held before the students. The laboratories are large and well equipped, and the lecture rooms and recitation rooms are ample. The course of study covers four terms of twenty-eight weeks each. Total fees for the first three years are $135 each, and for the third and fourth, $145 and $170, respectively. The Dean is Dr. Stanford E. Chaillé, New Orleans. The total number of medical students registered for 1904-5 was 469; graduates, 83. The seventy-second session begins Oct. 19, 1905, and will close May 2, 1906.

MAINE.

Maine, population 694,466, has one medical college, located in Portland, population 60,000. Board and lodging cost from $3 to $5 a week.

Portland.

MEDICAL SCHOOL OF MAINE.—This, the Medical Department of Bowdoin College, was organized in 1820. It has 15 professors and 18 instructors, total 33. Students of the first and second years are instructed in Brunswick, a town of 6,800 inhabitants. The third and fourth year classes are taught in Portland, where are situated the Maine General Hospital and other clinical advantages. Applicants for admission, unless they possess a diploma, are examined in English, arithmetic, algebra, geometry, United States history, physics, chemistry and Latin. The course covers four years of eight months each. Fees are $120 for the first year; $110 for the second and third, $110, and $110 for the fourth year. The Dean is Dr. Alfred Mitchell, Brunswick. Total number of students in 1904-5 was 93; graduates, 18. The next session opens Oct. 19, 1905, and closes June 20, 1906.

MARYLAND.

Maryland, with a population of 1,188,044, contains eight medical colleges, all located in Baltimore, a city with 508,957 inhabitants. They are as follows: School of Medicine of the University of Maryland, College of Physicians and Surgeons, Baltimore University School of Medicine, Baltimore Medical College, Women's Medical College, Southern Homeopathic Medical College, Johns Hopkins Medical School and Maryland Medical College. The Bay View Hospital, having a capacity for 2,000 patients, is open to students for clinical instruction, and furnishes good opportunities for practical demonstrations. Board and lodging can be obtained for from $3 to $5 per week.

Baltimore.

JOHNS HOPKINS MEDICAL SCHOOL.—This is the Medical Department of Johns Hopkins University, and was organized in 1893. The faculty comprises 11 professors, 71 lecturers, clinical professors, associate professors, associates, instructors and assistants, a total of 82. The Johns Hopkins Hospital and Dispensary furnishes abundant and varied clinical material; the lying-in department of the hospital, opened in 1896, is in successful operation. The requirements for admission demand that the applicant either has, (a) completed the chemical-biologic course which leads to the A.B. degree in the university; (b) graduated at an approved college or scientific school, and can furnish evidence of an acquaintance with Latin and a fair reading knowledge of French and German, and a knowledge of physics, chemistry and biology, such as may be obtained from a year's course, including laboratory instruction. The school is a member of the Association of American Medical Colleges. The laboratories are large, well lighted and well equipped. The buildings are ample and built expressly for the purpose for which they are used. In the method of instruction special emphasis is laid on practical work in the laboratories, dispensary and wards of the hospital. The first two years are devoted mainly to practical work in the laboratories, combined with demonstrations, recitations and lectures, and during the remainder of the course opportunity for the personal study of cases is given. The work covers a graded course of four years, eight and a half months to the year. Final examinations, partly written and partly oral, include practical tests in laboratory and clinical work; the general character of the student's work is closely watched. The charge for tuition is $200 per annum, with no fees unless a microscope is rented: that fee is $5 a year. The Dean is Dr. William H. Howell, 232 W. Lanvale St. Total registration in 1904-5 was 291; graduates, 55. The next session begins Oct. 3, 1905, and ends June 2, 1906.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE.—This institution was organized in 1807 as the College of Medicine of Maryland, and in 1812, other faculties having been added, the whole was chartered under the name of the University of Maryland. The faculty is composed of 14 professors, 46 associates and lecturers, etc., a total of 60. The University Hospital, a part of which is used for a hospital for foreign seamen and another portion for a free city hospital, offers excellent clinical facilities. Beside this, the Presbyterian Eye, Ear and Throat Charity Hospital, in which 11,317 patients were treated in 1902; the Hospital for the Relief of Crippled and Deformed Children, containing 40 beds; the Maternity Hospital, and a college dispensary furnish material for clinical study. This school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are ample and well equipped. An entirely new laboratory building has just been erected. The fourth-year class, divided into sections, receives special training in practical laboratory work in a well-appointed clinical laboratory. Didactic, laboratory and clinical instruction, special attention being paid to bedside work, make up the system of teaching. The course covers four years of eight months each, and is graded. The total fees for the first two years are $135 each; for the third year, $125, and $155 for the final year. The Dean is Dr. H. Dorsey Coale, Baltimore. The total number of students registered in 1904-5 was 340; graduates, 100. The ninety-ninth session begins Oct. 2, 1905, and will terminate June 1, 1906.

BALTIMORE MEDICAL COLLEGE.—This college was organized in 1881, and has a faculty of 59. The clinical material is furnished by the Maryland General Hospital, having a capacity of 200 beds; the Maryland Lying-in Hospital; the Mount Hope Retreat, which presents good opportunity for the study of nervous and mental diseases, and a college dispensary, which, beside the great number of ambulatory patients treated, has an outdoor department that permits of the advanced student taking care of charity cases and carrying out his own treatment. This college belongs to the Association of American Medical Colleges. The college buildings afford ample laboratory, clinical and lecture room space. Bedside teaching in the hospital wards is carried on in sections, and every member of the senior class is required to attend these clinical sessions. The course of study is graded and covers four years of eight months each. The Dean is Dr. David Streett. The total number of students registered in 1904-5 was 406; graduates, 98. The twenty-fifth session opens Sept. 20, 1905, and closes May 30, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1872, and in 1878 Washington University School of Medicine, established in 1827, was consolidated with it. The faculty numbers 53. The clinical facilities, beside those afforded in common with other schools, are supplied by the Baltimore City Hospitals, Hospital for the Colored Race, containing 100 beds; the Nursery and Child's Hospital, with 150 beds; the Maryland Lying-in Asylum and a college dispensary. This school is a member of the Association of American Medical Colleges. The work covers a course of four years, eight months constituting a year. Total fees are $115, $115, $115 and $135 for the respective years. The Dean is Dr. Charles F. Brown. The total number of students registered in 1904-5 was 298; graduates, 70. The next session opens Oct. 1, 1905, and closes June 1, 1906.

MARYLAND MEDICAL COLLEGE.—This school was organized in 1898 and has a faculty of 19 professors, 25 associates, lecturers, etc., 44 in all. The Franklin Square Hospital, West End Maternite and a college dispensary furnish clinical material. The course of study covers four years of eight months each. A matriculation fee of $5 and total laboratory fees for the four years of $55 are charged; tuition is $75 each year. The Dean is Dr. J. B. Schwatka, 1003 North Broadway. Total registration for 1904-5 was 207; graduates, 93. The eighth session begins Sept. 15, 1905, and closes in May, 1906.

WOMAN'S MEDICAL COLLEGE.—This school was organized in 1882 and has a faculty of 17 professors, 18 associates, assistants and lecturers, a total of 35. The Hospital of the Woman's Medical College and a college dispensary furnish general clinical material, while abundant special material is furnished by the Presbyterian Eye and Ear and the Sheppard and Enoch Pratt Hospital (for mental cases). The college is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are equipped with all necessary apparatus; the practical work is emphasized. Eight months constitute a school year and the course is a graded work for four years. The total fees for the first three years are $106 each, and $81 for the last year, with $30 graduation fee. The Dean is Dr. R. Grifith Davis, 1220 Eight St. Total number registered for 1904-5 was 36; graduates, 3. The twenty-fourth session opens Oct. 1, 1905, and closes May 31, 1906.

SOUTHERN HOMEOPATHIC MEDICAL COLLEGE.—This school was organized in 1890, and has a faculty of 10 professors, 14 associates and lecturers, a total of 24. The clinical facilities are those offered by the Maryland Homeopathic Hospital, which has 125 beds, and the dispensary; the obstetric department also furnishes clinical material. Applicants for matriculation must pass a satisfactory examination in English, arithmetic, geography, history and Latin, unless they possess satisfactory evidence that they have done a corresponding amount of work. The course covers graded work for four years, seven months to the year. The fees are $105 for the first year, $100 each for the second and third, and $130 for the last year; $350 in advance for the full four years' course, with a reduction in the fees for the fourth year to those whose attendance exceed 90 per cent. in previous years. The Dean is Dr. George T. Shower, 421 Roland Ave. Total registration for 1904-5 was 33; graduates, 9. The fifteenth session begins Oct. 3, 1905, and ends May 1, 1906. 1, 1906.

BALTIMORE UNIVERSITY SCHOOL OF MEDICINE.—This school, organized in 1884, has a faculty of 10 professors and 25 lecturers, demonstrators, etc., in all 35. The Baltimore University Hospital, Lying-in Hospital and the clinical material used in common with the other schools supply the facilities for practical work. The course is four years of six months each. The fees are about $100 each year. The Dean is Dr. Hampson H. Biedler, 119 W. Saratoga St. Total registration for 1904-5 was 70; graduates, 14. The next session opens Oct. 1, 1905, and closes April 1, 1906.

MASSACHUSETTS.

Massachusetts, population 2,805,340, has four medical colleges: Medical School for Harvard University, Boston University School of Medicine, College of Physicians and Surgeons, and Tufts College Medical School. They are all situated in Boston, a city of 603,163 inhabitants. Board and lodging can be obtained from $5 to $7 per week.

Boston.

MEDICAL SCHOOL OF HARVARD UNIVERSITY.—This was organized in 1782, and has a faculty of 32 professors, 113 associates and as-

sistants, etc., a total of 145. Beside the clinical advantages mentioned, the Boston Lying-in Hospital, the Boston Dispensary, where 43,918 patients were treated last year; the Infants' Hospital, the Children's Hospital, Long Island Hospital, containing 250 beds, and the Marine Hospital, all furnish excellent opportunity to the student for clinical study. Students are also permitted to visit the Free Hospital for Women and Carney Hospital on application to the physicians on duty. Candidates for admission "must present a degree in arts, literature, philosophy or science from a recognized college or scientific school, with the exception of such persons, of suitable age and attainments, as may be admitted by special vote of the faculty in each case. Each candidate is required to hand in the original note book in which he recorded the work performed by him in qualitative analysis, and also to pass a written examination in theoretical and descriptive chemistry. If conditioned in chemistry one year is allowed in which to remove the condition. The laboratories and lecture rooms offer ample facilities, and the equipment is good; special facilities are open to those desiring to pursue advanced or original work. The course of study covers four years of nine months each: the course is graded, and each correlated group as taken up presents sufficient variety to avoid monotony. A series of written, oral and practical examinations are distributed throughout the course of study. Fees: Matriculation, $5; $200 each year. The Dean is Dr. William L. Richardson, 688 Boylston St. The total registration for 1904-5 was 307; graduates, 67. The 124th session begins Sept. 28, 1905, and ends June 28, 1906.

TUFTS COLLEGE MEDICAL SCHOOL.—This school was organized in 1893 as the Medical Department of Tufts College. It has a faculty of 33 professors, 55 assistants and lecturers, etc., a total of 88. Clinical material is furnished by the Boston City Hospital, Massachusetts Charitable Eye and Ear Infirmary, Free Home for Consumptives, Free Hospital for Women, Boston Dispensary, Cambridge Hospital, St. Elizabeth's Hospital, Carney Hospital and the college dispensary; the student has also the advantages derived from an out-department in connection with the Boston Dispensary. "Graduates of a high school, college or university, and students having certificates of entrance to a college or university, or holding the State of New York Regents' certificate," also certain approved preparatory school graduates, are admitted without examination; all others must pass an examination in English, Latin, physics and mathematics, including elementary algebra and plane geometry. The laboratories and lecture rooms are ample in their equipment and capacity. Teaching is carried on by means of lectures, recitations and practical work in the laboratories and clinics; frequent examinations are held during a course, and final examination on completing the subject. Graded instruction covering four years of eight months each makes up the full course. The total fees are $150 each year; dissecting material is furnished at cost. The Dean is Dr. Harold Williams. Total number of students for 1904-5 was 385; graduates, 62. The twelfth session begins Sept. 27, 1905, and ends May 30, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1880, and has a faculty of 25 professors and 14 lecturers and assistants, a total of 39. Clinical facilities are furnished by the North End Dispensary Hospital, Union General Hospital, and the city and state institutions. This school is a member of the Association of American Medical Colleges. The course of study covers graded work for four years of nine months each. The total fees for the first year are $100, and for each of the other years about $110, with a graduation fee of $30. The Registrar is Dr. John H. Jackson, 155 Franklin St., Fall River. Total students registered, 1904-5, 168; graduates, 28. The twenty-sixth session begins Sept. 19, 1905, and ends June 18, 1906.

BOSTON UNIVERSITY SCHOOL OF MEDICINE.—Homeopathic. This school was organized in 1873; in 1874 the New England Female Medical College, founded in 1848, was merged into it. The faculty includes 20 professors, 39 associates and assistants, etc., a total of 59. Clinical material is furnished by the Massachusetts Homeopathic Hospital, containing 235 beds, a dispensary, a maternity hospital, and the Westborough Insane Hospital, 800 patients. Candidates who have taken their degree in arts, philosophy or science are not examined; certificates of graduation from approved high and preparatory schools accepted in lieu of entrance examinations; all others are examined in English, Latin, French or German, or history, mathematics, physics and chemistry. The instruction is graded and covers a period of four years, eight months each. Total fees for the first year are $105; for the second and third, $125 each, and for the last year, $155. The Dean is Dr. John P. Sutherland, 295 Commonwealth Ave. Total registration for 1904-5 was 93; graduates, 14. The thirty-third session opens Oct. 5, 1905, and closes June 6, 1906.

MICHIGAN.

Michigan, population 2,420,982, has six medical colleges. Two of these, University of Michigan, Department of Medicine and Surgery and the Homeopathic College of the University of Michigan, are located at Ann Arbor, a city of about 16,000 people. Board and lodging cost from $2.50 to $5 a week. Detroit, a city of 300,000 inhabitants, contains three medical colleges, as follows: Detroit College of Medicine, Detroit Homeopathic College and the Michigan College of Medicine and Surgery. Board and room can be obtained for $3 a week and upward. Grand Rapids Medical College is located in Grand Rapids, population 87,565. Room and board cost from $3 to $3.50 a week.

Ann Arbor.

UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY.—This was organized in 1850, and has a faculty composed of 18 professors, 35 associates, instructors, etc., a total of 53. The University Hospital, with nearly 200 beds, furnishes the clinical facilities. The requirements for admission provide that the applicant, either by certificate or examination, show a sufficient knowledge of the following: English grammar, rhetoric and composition; United States and general history; algebra, through quadratics, plane and solid geometry and plane trigonometry; physics, biology and chemistry, these subjects to be accompanied by laboratory work; German or French and Latin. The laboratories and their equipment are good, and the training in them and in didactic work is thorough. The new medical building accommodating the laboratories of hygiene, bacteriology, physiologic chemistry, pathology, histology, embryology and anatomy is now completed and occupied. This school is a member of the Association of American Medical Colleges. The curriculum embraces four years of nine months each. A combined course leading to degrees in both arts and medicine in six years is offered. The total fees for Michigan students for the entire course of four years is about $300, and for others $350. The Dean is Dr. Victor C. Vaughan. Total registration for 1904-5 was 376; graduates, 61. Next session begins Sept. 26, 1905, and will end June 21, 1906.

HOMEOPATHIC COLLEGE, UNIVERSITY OF MICHIGAN.—This department of the University was organized in 1875, and has a faculty of 29 professors and 20 assistants, total 49; a part of the teaching force is from the other departments of the University. The Homeopathic Hospital, containing 140 beds, furnishes material for clinical teaching. The course covers four years of nine months each. The total fees for Michigan students are about $240 for the four years, and for other students about $295. The Dean is Dr. W. B. Hinsdale. The enrolment for 1904-5 was 66; graduates, 12. The next session begins Sept. 26, 1905, and closes June 21, 1906.

Detroit.

DETROIT COLLEGE OF MEDICINE.—This school was formed in 1885 by the union of Detroit Medical College organized in 1868, and the Michigan College of Medicine, established 1880. The faculty embraces 21 professors, 71 lecturers, instructors, etc., a total of 92. Clinical facilities are offered by the following hospitals: St. Mary's and Harper, each of which contain a free dispensary; Woman's, St. Luke's, the Children's Free Hospital and the House of Providence. This school is a member of the Association of American Medical Colleges. The course covers four years of seven months each. The work includes laboratory, didactic and clinical study. Fees: Matriculation, paid once, $5; tuition, each term, $65; hospital and laboratory tickets, each $10, and diploma fee, $30. The Secretary is Dr. H. O. Walker. Total enrolment for 1904-5 was 208; graduates, 54. The next session begins Sept. 20, 1905, and will close May 3, 1906.

MICHIGAN COLLEGE OF MEDICINE AND SURGERY—SAGINAW VALLEY MEDICAL COLLEGE.—These two schools, organized in 1888 and 1896, respectively, were consolidated last year, to continue on the site of the former. The faculty numbers 57. Clinical facilities are offered by a college dispensary, the Emergency Hospital and Detroit Eye and Ear Infirmary. This school is a member of the Association of American Medical Colleges. The course covers graded work for four years of eight months each. The fees are about $80 to $95 per year; third year, $70, and $95 for the fourth year. The Dean is Dr. Hal. C. Wyman, 46 W. Adams Ave., Detroit. Total registration for 1904-5 was 78; graduates, 26. The next session begins Sept. 19, 1905, and will end May 8, 1906.

DETROIT HOMEOPATHIC COLLEGE.—This was organized in 1899, and has a faculty of 37. Grace Hospital and a college dispensary are available for study of clinical cases. Unless possessing at least a high school diploma applicants for admission will be examined by the state board. The course embraces work for four years of eight months each. Fees: From $70 to $90 per year. The Dean is Dr. D. A. MacLachlan; Registrar, J. M. Griffin. Total enrolment for 1904-5 was 44; graduates, 12. The next session begins September, 1905, and will close May, 1906.

Grand Rapids.

GRAND RAPIDS MEDICAL COLLEGE.—This was organized in 1897. The faculty is made up of 27 professors and 6 assistants, in all 33. Clinical cases in the U. B. A., St. Mary's and Woman's Butterworth hospitals and St. John's Orphan Asylum and a college dispensary are available for study. The course is four years of seven months each. The total fees are about $65 for each year. The Dean is Dr. G. L. McBride, 141 E. Bridge St. Next session opens Sept. 27, 1905, and closes May 1, 1906.

MINNESOTA.

Minnesota, population 1,751,394, contains three medical colleges: Hamline University College of Medicine, and the two medical departments of the University of Minnesota, viz., the College of Medicine and Surgery and the College of Homeopathic Medicine and Surgery. They are all situated in Minneapolis, a city with a population of 225,000. The various hospitals of Minneapolis furnish ample clinical material, and owing to the proximity to St. Paul the clinical advantages of that city are available. The average cost of board and lodging is $20 a month.

Minneapolis.

COLLEGE OF MEDICINE AND SURGERY, UNIVERSITY OF MINNESOTA.—This department of the University of Minnesota was created in 1883, but at that time its only function was to examine for the degrees of B.M. or M.D. In 1888, by the consolidation and absorption of the Minnesota Hospital Medical College and the St. Paul Medical College, its present status was assumed. The faculty is composed of 30 professors and 75 instructors and assistants, a total of 105. The medical school occupies six buildings, and its laboratories are excellent. Eight large hospitals in the Twin Cities, beside the University Dispensary and St. Paul dispensary, afford an abundant supply of material for clinical study. The curriculum covers four years of nine months each, and the work is carefully graded. The entrance requirement of one year of university, in addition to four years of high school work, limits the number of students, but assures a high standard of the student body. This school is a member of the Association of American Medical Colleges. Total number of students registered in 1904-5 was 227; graduates, 75. Total fees for each year, $100. The Dean is Dr. Parks Ritchie. The next session opens Sept. 1, 1905, and closes June 1, 1906.

COLLEGE OF HOMEOPATHIC MEDICINE AND SURGERY.—This is a department of the University of Minnesota and was organized in 1888. The faculty comprises 19 professors and 14 assistants, 33 in all. Instruction in the primary branches is received, in common with the students of the College of Medicine and Surgery from the professor of the department of medicine. The course is graded, extending over four years of nine months each. The total fees for the first two years are $100 each and $80 each for the last two years. The Dean is Dr. Eugene L. Mann. Total number of students registered in 1904-5 was 16; graduates, 4. The next session opens Sept. 1, 1905, and closes June 1, 1906.

HAMLINE UNIVERSITY COLLEGE OF MEDICINE.—This was organized in 1883. Its faculty is composed of 29 professors, 16 instructors and assistants, a total of 45. The laboratories and lecture rooms are large, well lighted and supplied with all the necessary equipment. Clinical work is offered to the student in City Hospital, Asbury Methodist Hospital, Swedish, St. Barnabas' and St. Mary's hospitals in Minneapolis, Luther Hospital, City and County, and St. Joseph's, in St. Paul, and the college dispensary. This school belongs to the Association of American Medical Colleges. The course of study covers graded work for four years, eight and a half months making a year. Total fees, first year, $90; second year, $87.50, and for each of the last two, $80. The Dean is Dr. George C. Barton. Total number of students, 1904-5, was 123; graduates, 10. The next session begins Sept. 19, 1905, and ends June 6, 1906.

MISSISSIPPI.

Mississippi, population 1,551,270, has one medical college, the Medical Department of the University of Mississippi, located at Oxford, a city with 2,000 inhabitants.

Oxford.

UNIVERSITY OF MISSISSIPPI MEDICAL DEPARTMENT.—This school was organized two years ago, with 7 professors and 5 assistants, a total of 12. Each college term extends over nine months. The school is a member of the Association of American Medical Colleges. Dr. W. S. Leathers is the Acting Dean. The total registration in 1904-5 was 18; graduates, none. The next session begins Sept. 21, 1905, and ends June 7, 1906.

MISSOURI.

Missouri, population 3,106,665, has eleven medical colleges, St. Louis, population 575,238, contains six of these, viz.: St. Louis College of Physicians and Surgeons, American Medical College, Homeopathic Medical College of Missouri, Medical Department St. Louis University, (Marion-Sims-Beaumont College of Medicine), Washington University Medical Department, and Barnes Medical College. Board and lodging can be procured for from $3.50 to $5 a week. Kansas City, with 163,752 inhabitants, has six colleges, namely: Kansas City Medical College, University Medical College, the Hahnemann Medical College of Kansas City, Medico-Chirurgical College and Eclectic Medical University. Room and board can be obtained in this city for from $3 to $5 a week. Ensworth Medical College and Central Medical College are located in St. Joseph, population 105,000; board and room can be had for from $3.50 to $5 a week. Department of Medicine of the University of Missouri is at Columbia, a town of 5,651. Board and lodging can be obtained at Columbia for from $2 to $5 a week. (Since writing the above, the Kansas City Medical College and the Medico-Chirurgical college have been absorbed by the University of Kansas, and the Ensworth and Central Medical colleges have united.)

Columbia.

DEPARTMENT OF MEDICINE OF THE UNIVERSITY OF MISSOURI.—This department was organized at Columbia in 1872. The faculty includes 11 professors, 19 assistant professors, lecturers, etc., a total of 30. Clinical facilities are supplied by the Parker Memorial State Hospital. A new $40,000 building for the medical laboratories has recently been completed and has excellent equipment. Special emphasis is laid on thorough training in the scientific branches which constitute the foundation of medicine. Four years' course nine months each, carefully graded. The university offers also a combined course of six years, conferring degrees in both arts and medicine. The entrance requirements are a diploma from a good high school, or the full equivalent. This school is a member of the Association of American Medical Colleges. There is no charge for tuition, the only expenses being a library fee of $10 each year, and small laboratory fees. The Dean is Dr. W. Mc-Alester. Total registration of students for 1904-5 was 108; graduates, 8. The next session opens Sept. 12, 1905, and closes June 6, 1906.

Kansas City.

UNIVERSITY MEDICAL COLLEGE.—This was organized in 1881 as the University of Kansas City Medical Department, and in 1888 was reorganized under its present name. Its faculty comprises 37 professors and 48 lecturers and assistants, a total of 85. Clinical material is furnished by the University Hospital, owned by the college, with 100 beds; the City Hospital, German Hospital, Home for the Aged, containing 147 beds; the Sisters' Hospital, Scarritt and St. Margaret's hospitals, the Children's Home, St. Joseph's Orphan Asylum, and the college dispensary and obstetric department. Instruction is given by means of lectures, recitations, demonstrations and laboratory work and clinics. The school is a member of the Association of American Medical Colleges. The college building, which has been recently enlarged, furnishes ample accommodations for laboratories and lecture rooms. The course of study covers four years of 30 weeks each, and the work is graded. The total fees for each of the first two years are $100; for the third, $80, and $100 for the fourth year. The Dean is Dr. Samuel C. James, Bryant Bldg. The total number of students registered in 1904-5 was 238; graduates, 58. The twenty-fourth session begins Sept. 5, 1905, and ends April 20, 1906.

KANSAS CITY MEDICAL COLLEGE.—This school was established in 1869, and in 1905 was absorbed by the University of Kansas, becoming the clinical department of the University. The first two years of the course will probably be taught in Lawrence, Kan., the last two in Rosedale, Kan., and Kansas City, Mo. The total registration for 1904-5 was 116; graduates, 34.

MEDICO-CHIRURGICAL COLLEGE.—This school was organized in 1897 as the Kansas City College of Medicine and Surgery, and was reorganized in 1898 under the above name. In 1905 the college became the clinical department of the University of Kansas, together with the Kansas City Medical College and the College of Physicians and Surgeons of Kansas City, Kan. The total registration for 1904-5 was 38; graduates, 12.

KANSAS CITY HAHNEMANN MEDICAL COLLEGE.—This school was formed by the union of the Kansas City Homeopathic Medical College, organized in 1905, and the Kansas City University College of Homeopathic Medicine and Surgery. It has a faculty of 43. The City Hospital, Homeopathic Hospital, the Sanitarium Scarritt, University, Women's and Children's, German, Bethany and Children's Hospitals are open to its students for clinical study. The college dispensary and clinics also supply clinical material. Applicants for admission must show by diploma, certificate or examination that they have a sufficient knowledge of English, arithmetic, geography, United States history and Latin equal to one year's work. The course covers four years of seven months each. The Dean is Dr. Moses T. Runnels, 912 Walnut St. Total registration for 1904-5 was 32; graduates, 9. The next session begins September 5, 1905, and closes April 1, 1906.

ECLECTIC MEDICAL UNIVERSITY.—This was organized in 1898, and has 25 in its faculty. The curriculum covers four years of eight months each. Fees, $70 each year, with a graduation fee of $15. The Dean is Dr. Theodore Doyle. Total students for 1904-5 was 56; graduates, 17. The next session begins Sept. 11, 1905, and ends April 22, 1906.

HOMEOPATHIC MEDICAL COLLEGE OF MISSOURI.—This was organized in 1857, and has a faculty of 33 professors and 5 assistants, total, 38; the curriculum covers four years of seven months each. Fees: First year, $80; second, $75, third, $60, and $85 for the fourth year. The Dean is Dr. L. C. McElwee, 1221 North Grand Ave., St. Louis. Total registration for 1904-5 was 45; graduates, 7. The next course begins Sept. 10, 1905, and ends April 15, 1906.

St. Joseph.

ENSWORTH MEDICAL COLLEGE.—This was organized in 1873 and has a faculty of 25 professors and 7 lecturers and assistants, 32 in all. Ensworth Hospital, with 250 beds; City Hospital, containing 40 beds; the State Hospital, No. 2, which is open to the students once a week, and a college dispensary furnish clinical material. Applicants for admission must show by certificate or examination that they possess a sufficient knowledge of English, arithmetic, algebra, physics and Latin equal to one year's instruction. The building furnishes ample laboratory and lecture-room facilities. The curriculum covers a graded course of four years of seven months each. The fees are about $55 each for the first three years, and $75 for the fourth year. The Secretary is Dr. J. W. Hedeus, 614 Francis St. Total enrolment for 1904-5 was 90; graduates, 22. The next session opens Sept. 12, 1905, and closes April 20, 1906. (This school united with the Central Medical College in 1905, assuming the name of Ensworth-Central Medical College.)

CENTRAL MEDICAL COLLEGE.—This school was organized in 1894, and has a faculty of 18 professors and 10 lecturers, in all 28. The Methodist and St. Joseph's hospitals, State Hospital No. 2, and the City and County hospitals are available for clinical study; a college dispensary also supplies clinical material. The requirements for admission are the possession of a high school diploma, or its equivalent, or an examination. The curriculum embraces four years of seven months each. Fees: First year, $55; second, $50; third, $50, and $75 for the fourth year. The Secretary is Dr. C. A. Tygart. Total enrolment for 1904-5 was 70; graduates, 17. The next session begins Sept. 15, 1905, and will end April 15, 1906. (College now united with Ensworth Medical College.)

St. Louis.

WASHINGTON UNIVERSITY MEDICAL DEPARTMENT.—This school was organized in 1891 from the St. Louis Medical College, which was founded in 1842. In 1899 the Missouri Medical College, organized in 1840, was added. The faculty comprises 39 professors, 35 lecturers and instructors, a total of 74. Clinical material is furnished by the St. Louis Mullanphy Hospital, Washington University Hospital and Dispensary, Washington University Lying-in Hospital, Bethesda Hospital and O'Fallon Dispensary. In addition to these, the City Hospital and Insane Asylum are used in common with the other schools. The Medical Department is a member of the Association of American Medical Colleges. The college buildings, of which there are two, furnish the best laboratory and lecture-room facilities. The course is four years of eight months each, and the system of study embraces laboratory, didactic and clinical teaching. The total fees for the first year are $126.25; second, $120.25; and for the third, $106.25, and fourth, $101.25. The Dean is Dr. Robt. Luedeking. Total registration of students for 1904-5 was 263; graduates, 64. The next session opens Sept. 20, 1905, and closes May 24, 1906.

ST. LOUIS UNIVERSITY MEDICAL DEPARTMENT (MARION-SIMS-BEAUMONT COLLEGE OF MEDICINE).—This is the Medical Department of the St. Louis University. The faculty is composed of 42 professors, 63 lecturers and assistants, a total of 105. Clinical facilities are offered by Alexian Brothers' Hospital, with 250 beds; Rebekah Hospital, having a capacity for 50 patients; Josephine Hospital, 50 beds; Mt. St. Rose Throat and Chest Hospital, 150 beds; Good Samaritan Hospital, 50 beds; St. Mary's Infirmary, containing 150 beds; the City Hospital and Insane Asylum, each

with a capacity of 600 patients. Grand Avenue Dispensary also furnishes good material for practical instruction. This school is a member of the Association of American Medical Colleges. The buildings afford ample laboratory and lecture-room space, and they are well equipped. The course of study embraces laboratory and clinical instruction, with recitations and lectures. The curriculum covers four years of seven months each. The total fees for the first year are $80; for the second and third, $75 each, and $100 for the fourth. The Secretary is Dr. H. W. Loeb, 3559 Olive St. Total number of students registered for 1904-5 was 385; graduates, 103. The next session opens Oct. 1, 1905, and closes May 1, 1906.

ST. LOUIS COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1878, and has a faculty of 24 professors, 15 lecturers, instructors, etc., a total of 39. The resources for clinical instruction are Jefferson Hospital, which is open to students of this college only; City Hospital, with 800 beds; Female Hospital, having 250 beds; City Insane Asylum; City Poorhouse, and the college dispensary. This college is a member of the Association of American Medical Colleges. The laboratory and lecture-room space and the equipment are ample. The course of study covers four years of seven months each, and is graded. Total fees for the first year are $80; second, $70; third, $75, and $85 for the fourth year. The Dean is Dr. Waldo Briggs, 2600 Gamble St. Total number of students registered, 1904-5, was 275; graduates, 29. The next session begins Sept. 15, 1905, and ends April 12, 1906.

BARNES MEDICAL COLLEGE.—(Medical Department Barnes University.) This school was organized in 1902, and has a faculty of 35 professors and 25 lecturers and assistants, a total of 60. The clinical advantages are those offered by Centenary Hospital, with 150 beds; City Hospital, the college dispensary and the outdoor obstetrical department. The laboratories are well equipped and offer facilities ample. The course of study includes graded work for four years of seven months each. The total fees for the first three years are $75 each year, and $85 for the fourth year. The Secretary is Dr. Pinckney French, Missouri Trust Building. Total registration for 1904-5 was 427; graduates, 106. The next session opens Sept. 17, 1905, and closes May 10, 1906.

AMERICAN MEDICAL COLLEGE.—Eclectic. This was organized in 1873, and has a faculty of 17 professors. St. Louis City Hospital and a college dispensary supply ample clinical material. The requirements for admission are those of the National Federation of Eclectic Medical Colleges of which this college is a member. The course of study covers four years of seven months each. The total fees are: Tuition, $75 per year, dissecting material $5 per year for four years, final examination and graduation fee $25. Total registration for 1904-5 was 66; graduates, 16. The Dean is Dr. M. M. Hamlin, 2006 Lawton Avenue. The next session opens Sept. 18, 1905, and closes April 22, 1906.

NEBRASKA.

Nebraska, population 1,066,300, has three medical colleges: The University of Nebraska College of Medicine and John A. Creighton Medical College of Omaha (population 102,555); and Lincoln Medical College, at Lincoln (population 40,169). Board and lodging can be obtained for from $3 to $5 a week.

Lincoln and Omaha.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE.—This was organized in 1880 as the Omaha Medical College. In 1902 an affiliation was entered into with the University of Nebraska, the name being changed to the College of Medicine of the University of Nebraska. The first two years are given at Lincoln. The last two years are given only at Omaha. The faculty is composed of 38 professors and 23 lecturers and assistants, total 61. The Douglas County, Immanuel, Wise Memorial and Omaha Methodist hospitals, together with the college dispensary, furnish an abundance of material for clinical study and demonstration. The course consists of graded studies covering four years of eight months each. The method of instruction consists of didactic and clinical lectures, section clinics, demonstrations, recitations and laboratory work. The college building is well adapted to its purpose, the laboratories being well equipped and the lecture room commodious. The fees, including breakage deposits, are $90 for the first two years, and $100 for the last two years. Total number of students enrolled in 1904-5, 92; graduates, 28. The college is a member of the Association of American Medical Colleges. The Secretary is Dr. Paul H. Lindigton, Bee Building. The next annual session will begin Sept. 19, 1905, and end May 24, 1906.

Omaha.

JOHN A. CREIGHTON MEDICAL COLLEGE.—This school, organized in 1892, is the Medical Department of Creighton University, and has a faculty of 32 professors and 17 associates lecturers and assistants, a total of 49. The clinical facilities are those of St. Joseph's Hospital, containing 300 beds and having a clinical amphitheater connected with it; St. Bernard's Hospital, with 256 beds; Douglas County Hospital, Presbyterian and Mercy hospitals, and the college dispensary; the material is abundant and varied. The school is a member of the Association of American Medical Colleges. The building, which was completed in 1898, contains excellent facilities for laboratory and lecture-room work, and the equipment is good. In the methods of instruction, including clinical, didactic and laboratory work, special emphasis is laid on practical work. The course of study embraces four years of eight months each. The total fees for the first two years are $90 each, and $85 for each of the last two years. The Dean is Dr. D. C. Bryant, McCague Bldg. Total number of students registered in 1904-5 was 167; graduates, 34. The thirteenth session opens Sept. 19, 1905, and closes May 1, 1906.

Lincoln.

LINCOLN MEDICAL COLLEGE.—Eclectic. This was organized in 1889, and has a faculty of 28. The requirements for admission are those of the National Confederation of Eclectic Medical Colleges, of which this college is a member. The course of study covers four years of thirty-two weeks each. The total fees for the first year are $80; second, $75; third, $75, and $85 for the fourth year, or $255 for all four years together. The Secretary is Dr. Samuel Metheny. Total number of students for 1904-5 was 81; graduates, 15. The next session begins Sept. 13, 1905, and ends April 20, 1906.

NEW HAMPSHIRE.

New Hampshire, population 411,588, contains one medical college, located in Hanover, population, 1,884.

Hanover.

DARTMOUTH MEDICAL SCHOOL.—This is the Medical Department of Dartmouth College, and was organized in 1797. Its faculty is made up of 18 professors and 2 instructors, 20 in all. The Mary Hitchcock Memorial Hospital, a cottage hospital of 36 beds, supplies the clinical material. Applicants for admission must possess an education at least equivalent to graduation from a registered high school. The laboratories afford good facilities for work. The course covers four years of thirty-two weeks each. Fees: $100 each year. The Dean is Dr. William T. Smith. The total number of students registered for 1904-5 was 60; graduates, 12. The work for the first and second years begins with that of the academic department, commencing Sept. 21, 1905, and closing June 27, 1906; for the advanced classes it begins Aug. 15, 1905, and ends March 30, 1906.

NEW YORK.

New York State, population 7,268,894, has ten medical colleges. Seven of these, College of Physicians and Surgeons, Columbia University, Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Eclectic Medical College of the City of New York, Cornell University Medical College and the University and Bellevue Hospital Medical College, are located in New York City, population 3,437,202. This city, with its hospitals and dispensaries, offers abundant clinical material. Board and lodging can be obtained for from $5 to $7 a week.

Albany Medical College is in Albany, a city of 100,000 people, where board and room can be had for from $4 to $5 a week.

The University of Buffalo Medical Department is situated in Buffalo, population 352,387; here board and lodging can be obtained for from $3.50 to $5 per week.

The College of Medicine, Syracuse University, is in Syracuse, a city of 18,374 inhabitants. Board and lodging can be obtained for from $3.50 a week upward.

The laws of the State of New York require of the prospective student of medicine a preliminary education equivalent to that obtainable in a four years' course in any of the public high schools recognized by the regents as maintaining a satisfactory standard. On proof of at least this amount of education, a medical-student certificate will be issued by the state authorities. Certain medical schools of the state have additional requirements.

1. The College of Physicians and Surgeons requires a medical-student certificate issued on the attendance of at least one year's course of study in a college or scientific school registered by the Regents as maintaining a satisfactory standard (or equivalent) or a certificate of the college entrance examination board covering 15 points, each point being the equivalent of a course of five periods weekly throughout the academic year.

2. Cornell University Medical College requires Regents' counts; in algebra 4 counts, plane geometry 4, elementary United States history and civics 2, second year English or its equivalent 8, second year Latin or the first four books of Caesar's Commentaries, or first year Latin and first year German or French or Spanish 8, making a total of 26 counts, with additional counts aggregating 48 counts.

3. University and Bellevue Hospital Medical College requires unconditional matriculation with a medical-student certificate.

4. The College of Medicine, Syracuse University, requires Regents' counts; in Latin 4 counts, plane geometery 4, algebra 2 and inorganic chemistry 2, with additional, aggregating 48 counts.

New York City.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1807 and its present relation, that of Medical Department of Columbia University, was assumed in 1860. The faculty embraces 32 professors and 95 demonstrators, instructors, etc., a total

of 128. The Vanderbilt Clinic, where 42,995 patients were treated during the year 1904, and which is equipped with all modern appliances for the study and treatment of disease, and Sloane Maternity Hospital, containing 124 beds, offer exclusive clinical advantages to students of this school. Beside these, Roosevelt Hospital, containing 244 beds; New York Hospital, with 190 beds; Bellevue, 1,100 beds; Presbyterian, 330 beds; St. Luke's, 225 beds; General Memorial, 100 beds, and New York Foundling Hospital, 600 to 700; Willard Parker and Reception and Riverside hospitals, 600 beds; Babies' Hospital, 50 beds; St. Mary's Free Hospital for Children, 120 beds, all offer free clinical teaching to matriculants of this school. The laboratories, lecture rooms and amphitheaters are ample in equipment and accommodation; special provisions are made to equip each student thoroughly in each of the laboratories and thus make the work individual. The work is graded, covering four years of eight months each. The Dean is Dr. Samuel Lambert. The total fees for the first year are $255; for the second and third, $250, and $275 for the fourth year. Total registration for 1904-5 was 568; graduates, 178. The next session begins Sept. 27, 1905, and ends June 13, 1906.

LONG ISLAND COLLEGE HOSPITAL.—This was organized in 1858 and has a faculty of 20 professors and 75 assistants, instructors, etc., a total of 95. Long Island College Hospital, containing 300 beds and connected with a four-story maternity hospital; Polhemus Memorial Clinic, Dudley Memorial and Hoagland Laboratory, completely equipped with the most modern apparatus, are all a part of the college. Beside the clinical facilities furnished by these, members of the faculty attend at Kings County, St. John's, Brooklyn, Norwegian, Williamsburg, Methodist Episcopal and the Brooklyn Eye and Ear hospitals, where the students are offered opportunities for clinical study. Many of these also contain outpatient departments, thus permitting advanced students to attend personally to cases. Bedside instruction is also given in the wards. The course covers four years of thirty weeks each. Fees: First year, $195; second, $200; third, $160, and $195 for the fourth year. The Secretary is Dr. Joseph H. Raymond. Total registration, 1904-5, was 414; graduates, 78. The forty-eighth session opens Oct. 2, 1905, and closes June 2, 1906. The summer session has been discontinued owing to the lengthening of the regular session.

CORNELL UNIVERSITY MEDICAL COLLEGE.—This department of Cornell University was established in 1898. The faculty is composed of 45 professors and 162 instructors and assistants, a total of 207. The City Hospital, having 1,000 beds; Bellevue Hospital, New York Hospital, Presbyterian, Willard Parker and Reception with 200 beds; New York Skin and Cancer; St. Francis, having a capacity of 125; St. Vincent's, with 200 beds; Manhattan Eye and Ear Infirmary, in addition to a large college dispensary, furnish the clinical resources; the material is abundant and varied. The first two years of the course are taken at New York or at Ithaca, and the work is devoted to the fundamental scientific subjects. The last two years are spent mostly in practical and clinical work and the hospital advantages are utilized. The Loomis Laboratory, a five-story modern building, is well equipped and supplies ample practical laboratory facilities required in the advanced work. "The essential features of the entire course is the division of the classes of the several years into small sections." Fees: First year, $190; second and third, $180 each, and $200 for the fourth year. The Dean is Dr. William M. Polk. Total registration for 1904-5 was 302; graduates, 74. The next session opens Sept. 27, 1905, and closes June 13, 1906.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.—This is a department of the New York University, and was founded in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. The faculty is composed of 39 professors and 54 instructors, assistants, etc., in all 103. Bellevue, City hospitals, hospitals of the Workhouse and Almshouse, Manhattan State Hospital for the Insane, Willard Parker and Reception hospitals, Riverside Hospital for Contagious Diseases, Randall's Island, Presbyterian, St. Luke's, St. Vincent's, General Memorial, Babies', Columbus, Harlem, New York Foundling, and the Society for the Lying-in hospitals, the New York Eye and Ear Infirmary, and a large college dispensary are open to students of this school for a study of clinical cases. The Carnegie building, a five-story structure adjoining the college, is devoted to laboratory instruction and investigation, and, with the other two large college buildings, affords good laboratory and lecture-room facilities. A new six-story addition to the laboratory building has just been completed. The course of instruction covers four years of eight months each. Actual clinical teaching, in conjunction with and found on laboratory work, recitation and didactic teaching, is emphasized to the greatest possible degree. Fees: First year, $185; second and third, $180 each, and $195 for the fourth year. The Dean is Dr. Edward G. Janeway. Total registration for 1904-5 was 391; graduates, 47. The next session opens Oct. 4, 1905, and closes June 9, 1906.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND HOSPITAL.—This school, organized in 1858, has a faculty of 33 professors and 44 lecturers, assistants, etc., 77 in all. Flower Hospital, adjoining the college and having a completely equipped out-patient department; Metropolitan Hospital, New York Ophthalmic Hospital and the Laura Franklin Free Hospital for Children also furnish clinical facilities. The course covers four years of seven months each. Total fees for the first year, $130; second, $130; third, $125, and $155 for the fourth year. The Dean is Dr. W. H. King, 64 W. 51st St. Total students registered for 1904-5 was 110; graduates, 23. The next session begins Oct. 4, 1905, and ends May 17, 1906.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN.—Homeopathic. This school was organized in 1863, and has a faculty of 22 professors, 19 lecturers and assistants, total 41. The college hospital and dispensary, the Memorial Hospital for Women, Metropolitan, Ophthalmic and the Laura Franklin Free Hospital for Children afford clinical material. The course covers four years of twenty-six weeks each. Fees: First year, $145; second, $140; third, $135, and $155 for the fourth year. The Dean is Dr. M. Belle Brown, 30 W. 51st St. Total registration for 1904-5 was 34; graduates, 9. The next session opens Oct. 2, 1905, and closes May 9, 1906.

ECLECTIC MEDICAL COLLEGE OF THE CITY OF NEW YORK.—This was organized in 1865, and has a faculty of 15 professors and 19 lecturers, demonstrators, etc., 34 in all. A college dispensary, Beachonian Dispensary, Manhattan and Red Cross hospitals and Muncie Sanatorium supply clinical facilities. The work covers four years of seven months each. The total fees: First year, $125; second, $125; third, $125, and $185 for the fourth year. The Dean is Dr. George W. Beahowitz. Total registration for 1904-5 was 99; graduates, 13. The next session opens Sept. 27, 1905, and closes May 1, 1906.

Albany.

ALBANY MEDICAL COLLEGE.—This school was organized in 1838, and in 1873 it assumed its present relations, as Medical Department of Union University. The faculty is composed of 15 professors and 57 lecturers, instructors and assistants, a total of 72. Albany, St. Peter's, Child's and County hospitals, South End Dispensary, Eye and Ear Infirmary and the Albany Hospital for Incurables, also the free dispensaries connected with each, are open to students for clinical study. The curriculum embraces graded work for four years of seven and one-half months each. Teaching is carried on in the laboratories, clinics and lecture rooms. Examinations are held twice a year in all subjects. Fees: Third year, $110, and $130 for each other year. The Dean is Dr. Samuel B. Ward. Total registration for 1904-5 was 172; graduates, 52. The next annual session opens Sept. 26, 1905, and closes May 8, 1906.

Buffalo.

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT.—This was organized in 1846 and has a faculty made up of 46 professors and 36 assistants, lecturers, etc., a total of 82. Buffalo General Hospital, Hospital of the Sisters of Charity, Erie County and German hospitals and the German Deaconess' Hospital supply ample clinical material for study. A college dispensary, recently organized, is also of value in practical work. The buildings and hospitals are well equipped for clinical and laboratory work. Bedside instruction is insisted on and the senior students are permitted to assist in operations and give anesthetics. This school is a member of the Association of American Medical Colleges. The course embraces four years of seven months each. The tuition is $125 each year; this does not include laboratory fees. The Dean is Dr. Matthew D. Mann, 37 Allen St. Total registration for 1904-5 was 231; graduates, 37. The sixtieth session opens Sept 25, 1905, and closes May 31, 1906.

Syracuse.

COLLEGE OF MEDICINE, SYRACUSE UNIVERSITY.—This school was organized in 1872 as the Medical Department of Syracuse University. The faculty is composed of 15 professors and 39 lecturers, instructors, etc., in all 54. Clinical facilities are furnished by St. Joseph's Hospital, with a capacity of 200 patients; Hospital of the House of the Good Shepherd, Syracuse Hospital for Women and Children, Onondaga County Orphan Asylum, and the Syracuse Free Dispensary. The laboratories and amphitheaters are large and well equipped. This school is a member of the Association of American Medical Colleges. The curriculum embraces a four years' graded course, eight months making a school year. The total fees for each of the four years are $130. Beginning with the session of 1905-6, additional laboratory and graduation fees will be required, making the average total fee for each year $167.25. The Dean is Dr. Henry D. Didama, 424 S. Salina St. Total number of students registered for 1904-5 was 134; graduates, 31. The next session opens Oct. 3, 1905, and closes June 13, 1906.

NORTH CAROLINA.

North Carolina, population 1,893,810, has four medical schools which grant degrees and one which gives only the first two years of the medical course. The Medical Department of the University of North Carolina is located at Chapel Hill (population 1,999) and at Raleigh (population 13,643). The Leonard School of Medicine is at Raleigh. The North Carolina Medical College is located at Davidson (population 904), and at Charlotte (population 18,000). Wake Forest School of Medicine is at Wake Forest (population 823).

Chapel Hill and Raleigh.

UNIVERSITY OF NORTH CAROLINA MEDICAL DEPARTMENT.—This school was organized in 1891, and formerly gave only the work of the first two college years at Chapel Hill. In 1902 the course was extended to four years by the establishment of a department at Raleigh, in which the last two years are given. Degrees are now conferred and the faculty in the completed school of medicine numbers 29. It is a member of the Association of American Medical Colleges. The number of students enrolled in 1904-5 was 100; graduates, 11. Total fees are $85 per year for the first year, and best may be had for from $84 to $102 per college year. The President is Dr. F. P. Venable, Chapel Hill. The next session will begin Sept. 11, 1905, and end June 6, 1906.

Raleigh.

LEONARD SCHOOL OF MEDICINE.—Colored. This department of Shaw University was established in 1882 by the American Baptist Home Mission Society to train colored students of medicine. It has a faculty of 10. A free hospital and dispensary supply clinical material. A preliminary entrance examination is given to applicants not possessing a certificate or diploma of educational requirements. The course covers four years of seven months each. The total fees for each year are $75. The dormitory plan is adopted generally, and board and room costs $2 a week. The Dean is Dr. James McKee. Total enrolment for 1904-5 was 136; graduates, 21. Next session opens Oct. 1, 1905, and closes April 14, 1906.

Davidson and Charlotte.

NORTH CAROLINA MEDICAL COLLEGE.—This school was organized in 1893, and has a faculty of 21. The Presbyterian Hospital in Charlotte supplies the clinical facilities. The course covers four

years of eight months each, the last year at Charlotte. Fees: First three years, $85 each, and $100 for the fourth year. The President is Dr. J. P. Monroe of Davidson; Dr. I. W. Faison, Charlotte, is Dean of the Faculty. The total registration for 1904-5 was 81; graduates, 20. The next session begins Sept. 7, 1905, and closes April 2, 1906.

Wake Forest.

WAKE FOREST SCHOOL OF MEDICINE.—This school was organized in 1902. It only gives the first two years of the medical course. Each annual course extends over nine months. The school is a member of the Association of American Medical Colleges. It has a faculty of 10, and last year enrolled 18 students. The fees are $85 a year. The Dean is Dr. Frederick K. Cooke. The next session opens Aug. 31, 1905, and closes May 26, 1906.

OHIO.

Ohio, population 4,157,545, has ten medical colleges. Four of these, the Medical College of Ohio, Eclectic Medical Institute, Miami Medical College, and Pulte Medical College are located in Cincinnati, a city of 325,902 inhabitants. The clinical advantages of Cincinnati are good; beside many smaller hospitals, the Cincinnati Hospital is open to the students for study. Board can be procured in Cincinnati for from $3 to $5 per week. The Laura Memorial Woman's Medical College has ceased to exist.

Cleveland, population 381,768, contains three medical schools: Western Reserve University Medical College, Cleveland College of Physicians and Surgeons and the Cleveland Homeopathic Medical College. The City Hospital, with 275 beds, is used in common by them for clinical study. Board and lodging can be had for from $2.50 to $5 a week.

Columbus, population 125,560, contains two: Starling Medical College and Ohio Medical University. Board and lodging cost from $2.50 to $5 per week.

Toledo, with 131,822 people, has one medical school; Toledo Medical College. It has good clinical advantages. Board and room can be had for from $3 to $5 a week.

Cincinnati.

MEDICAL COLLEGE OF OHIO.—This is the Medical Department of the University of Cincinnati organized in 1819, and has a faculty made up of 24 professors, 32 lecturers and assistants, a total of 56. Good Samaritan Hospital, with 100 beds; Cincinnati Hospital, with 550 beds, and a well-equipped college dispensary furnish clinical facilities. The buildings supply ample laboratory and lecture-room space, and their equipment is good. The course of study is graded and covers four years of eight months each. This school is a member of the Association of American Medical Colleges. The lecture fees are $123 each year for each student entering after July 1, 1903; $100 each year for those who have matriculated prior to July 1, 1903. In addition there is a matriculation fee of $5, payable but once, and a graduation fee of $25. Total registration of students for 1904-5 was 121; graduates, 33. The Dean is Dr. F. S. Conner, Cincinnati. The next session begins Sept. 28, 1905, and ends May 30, 1906.

MIAMI MEDICAL COLLEGE.—This school was organized in 1852, and has a faculty of 23 professors and 35 lecturers and demonstrators, a total of 58. The clinical facilities are furnished by the Cincinnati Hospital and a college dispensary. This college is a member of the Association of American Medical Colleges. The curriculum embraces a four-year graded course of eight months each. The total fees are, for the first year, $130; for the second and third, $125, and $150 for the fourth year. The Dean is Dr. J. C. Oliver, 628 Elm St. The total registration for 1904-5 was 85; graduates, 24. The next session opens Oct. 1, 1905, and closes June 1, 1906.

ECLECTIC MEDICAL INSTITUTE.—This school, organized in 1845, has a faculty of 21 members. The Seton Hospital, Cincinnati Hospital, and a college dispensary furnish clinical material. It is a member of the National Confederation of Eclectic Medical Colleges. The course covers four years of thirty weeks each. The fees are $75 for the first year, with a graduation fee of $25. The Dean is Dr. Rolla L. Thomas, 792 East McMillan St. Total enrolment, 1904-5, was 133; graduates, 18. The next session begins Sept. 18, 1905, and closes April 18, 1906.

PULTE MEDICAL COLLEGE.—Homeopathic. This was organized in 1872 and has a teaching force of 21 professors and 17 assistants, 38 in all. Pulte Hospital, Cincinnati Hospital, Bethesda Hospital, Home of the Friendless and Foundlings, and a college dispensary supply clinical material. The curriculum covers four years of seven months each. Fees: First year, $80; for the second and third, $75 each, and $100 for the fourth. The Dean is Dr. Charles E. Walton. Total enrolment for 1904-5 was 18; graduates, 5. The next session opens Sept. 27, 1905, and closes May 1, 1906.

Cleveland.

THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.—This school was organized in 1863 as Charity Hospital Medical College, became the Medical Department of Wooster University in 1869, and the Medical Department of the Ohio Wesleyan University in 1896, when it assumed its present title. The faculty is composed of 28 professors, 8 assistant professors, 29 lecturers, assistants, instructors, etc., 50 in all. Cleveland General Hospital, Cleveland City Hospital and a college dispensary are used for regular clinical teaching. St. Alexis, St. John's, St. Clair and Mt. Sinai hospitals are utilized for extra-mural clinics. This school is a member of the Association of American Medical Colleges. The school is co-educational. The total annual fees are $130. The curriculum covers four years of eight months each. The Dean is Dr. R. E. Skeel, 765 Prospect St. Total enrolment for 1904-5 was 84; graduates, 16. The next term opens Sept. 20, 1905, and closes May 4, 1906.

WESTERN RESERVE UNIVERSITY MEDICAL COLLEGE.—The Medical Department was organized in 1843. Its teaching faculty includes 23 professors, 31 lecturers, demonstrators and assistants, a total of 54. Clinical facilities are offered students of this school by Lakeside Hospital, having 250 beds; St. Vincent's Hospital, having about 150 beds; City Hospital, with 250 beds; St. Alexis Hospital, with 250 beds, and the Home of Maternity, with the dispensary service at Lakeside and Charity hospitals, and a tuberculous dispensary at the college. The laboratory chairs are endowed, the teachers devoting their entire time to teaching and research work. A clinical laboratory has recently been added, where a systematic course of instruction is given. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. Three years of college work are required for admission to first year of medical course. The total fees are $125 for each year. The Dean is Dr. B. L. Millikin, 280 Euclid Avenue. Total enrolment for 1904-5 was 73; graduates, 6. The next session begins Oct. 1, 1905, and closes June 4, 1906.

CLEVELAND HOMEOPATHIC MEDICAL COLLEGE.—This school was founded in 1897 by a consolidation of Cleveland University of Medicine and Cleveland Medical College, the former of which was incorporated in 1850, and is the second oldest homeopathic medical college in the United States. The faculty includes 34 professors and 29 adjuncts, lecturers, etc., 63 in all. The clinical facilities are obtained from the Cleveland Homeopathic Hospital, the Cleveland City Hospital, the Cleveland Maternity Hospital, and a college dispensary. The course embraces four years of thirty weeks each. Fees: First year, $110; second and third years, $105 each, and $125 for the fourth year. The Dean is Dr. Galus J. Jones. Total number of students registered, 1904-5 was 66; graduates, 24. The next session opens Sept. 27, 1905, and closes May 16, 1906.

Columbus.

OHIO MEDICAL UNIVERSITY.—This school was organized in 1890, and has a faculty of 22 professors, 6 instructors, 9 assistants and demonstrators, 37 in all. The protestant Hospital, State Hospital, Ohio Penitentiary Hospital and a college dispensary provide material for clinical work. This school is a member of the Association of American Medical Colleges. The course is four years of 34 weeks each. Fees: First year, $105; second year, $100; third year, $100, and $110 for the fourth year. The Dean is Dr. George M. Waters. Total students for 1904-5 was 158; graduates, 37. The next session begins Sept. 12, 1905, and ends May 8, 1906.

STARLING MEDICAL COLLEGE.—This school was organized in 1847 and has a faculty composed of 20 professors and 16 lecturers, associates, etc., a total of 36. St. Francis Hospital, which is under the control of this faculty; Hawkes' Hospital of Mt. Carmel, the Lawrence Hospital, St. Anthony Hospital and a college dispensary are available for clinical study. This college is a member of the Association of American Medical Colleges. The work covers four years of thirty weeks each. Fees: $100 per year; matriculation fee, $5; graduation fee, $10. The Dean is Dr. Starling Loving. Enrolment for 1904-5 was 103; graduates, 30. The next session opens Sept. 13, 1905, and closes May 5, 1906.

Toledo.

TOLEDO MEDICAL COLLEGE.—The school was organized in 1882, and in 1904 became the Medical Department of Toledo University. It has a faculty of 20 professors, 20 lecturers and assistants, in all 40. Toledo Hospital, St. Vincent's and Robinwood Hospitals, Lucas County Infirmary Hospital, Toledo Hospital for the Insane, and a free dispensary supply clinical facilities. This college is a member of the Association of American Medical Colleges. The curriculum embraces four years of eight months each. The fees are $75 for each year, with a matriculation fee of $5, payable once. The Dean is Dr. A. A. Dickey, 10 Hartford St. Total enrolment for 1904-5 was 83; graduates 7. The next session opens Sept. 22, 1905, and closes May 11, 1906.

OKLAHOMA.

Oklahoma, population 398,331, has only one medical school, which is located at Norman, a city of about 3,682 inhabitants.

Norman.

SCHOOL OF MEDICINE, UNIVERSITY OF OKLAHOMA.—This school, which was organized in 1903, teaches only the first two years of the regular medical course, each course extending over a period of nine months. Total registration for 1904-5 was 8. The Dean is Dr. R. P. Bloops; the Registrar, Roy Hadsell. The next session begins Sept. 12, 1905, and ends June 9, 1906.

Oklahoma City.

COLLEGE OF MEDICINE EPWORTH UNIVERSITY.—In 1904 only the first year of the medical course was given, but beginning October, 1905, the full four years' course will be taught. The faculty consists of 13 professors and 12 assistants, instructors, etc., a total of 27. The Oklahoma City, St. Anthony's hospitals, Amie Rescue Home and a college dispensary furnish material for clinical instruction. The laboratories are well supplied and the lecture rooms are large, well lighted and well ventilated. The entrance requirement is a high school diploma or its equivalent. The course of study embraces graded work for four years of seven months each. The total fees are about $70 each year. The Dean is Dr. A. K. West; Secretary, Dr. H. C. Todd. The registration for 1904-5 was 7; no graduates. The next session begins Oct. 3, 1905, and ends May 11, 1906.

OREGON.

Oregon, population 413,536, has two medical colleges: Medical Department Willamette University, located in Salem, a city

of 10,000 people, and University of Oregon Medical Department, in Portland, a city of about 125,000 population. Board and lodging may be obtained in Salem for from $3 to $5 per week, and in Portland for from $4 to $6.

Salem.

MEDICAL DEPARTMENT WILLAMETTE UNIVERSITY.—The school was organized in 1864. The faculty consists of 10 teachers. Clinical facilities for study are supplied by Salem Hospital, and a college dispensary. This school is a member of the Association of American Medical Colleges. The course embraces four years' work of six months each. Fees: First year, $110; second, $100; third, $75, and $50 for the fourth year. The Dean is Dr. W. H. Byrd. Total enrolment for 1904-5 was 50; graduates, 7. The next session begins Oct. 1, 1905, and ends March 30, 1906.

Portland.

UNIVERSITY OF OREGON MEDICAL DEPARTMENT.—This department of the State University was organized in 1887, and has a faculty of 14 professors and 14 assistants, lecturers, etc., a total of 28. Good Samaritan and St. Vincent's hospitals, containing 200 and 250 beds, respectively, and Multnomah County Hospital furnish good material for clinical study. The requirements for admission are those of the Association of American Medical Colleges, but the members of the faculty do not hold examinations for entrance. The college building is modern and well equipped, presenting ample teaching facilities. The course is four years of seven months each. Fees: First year, $142.50; second, $137.50; third, $107.50, and for the fourth, $57.50. The Dean is Dr. Simeon E. Josephi, Portland. The total number of students for 1904-5 was 102; graduates, 26. The next session opens Sept. 15, 1905, and closes April 30, 1906.

PENNSYLVANIA.

Pennsylvania, population 6,302,115, has seven medical colleges. Of these Philadelphia, having a population of 1,293,697, contains six as follows: University of Pennsylvania Department of Medicine, Jefferson Medical College, Hahnemann Medical College, Woman's Medical College of Pennsylvania, Medico-Chirurgical College of Philadelphia and Temple College Department of Medicine. The clinical facilities of Philadelphia present abundant and varied material for study. Beside the individual hospitals connected with each of the schools the charity hospitals are open to all the students in common. Board and lodging costs from $4 a week upward.

The other school, Western Pennsylvania Medical College, is situated in Pittsburg, a city of 321,616 people. The cost of board and lodging is from $4 to $6 a week.

Philadelphia.

UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF MEDICINE.—This is the first medical college established in this country, having been organized in 1765 as the Medical Department of the College of Philadelphia; the first degree was granted in 1768. When from the College of Philadelphia the University of Pennsylvania was organized, in 1791, it became the Medical Department of the University, its present relation. The faculty is made up of 27 professors, 2 associate professors, 4 adjunct professors, 1 assistant professors, 97 demonstrators, lecturers, associates, instructors, etc., a total of 137. Abundant and varied clinical material is furnished by the University Hospital, capacity 300 beds, which treats over 14,000 cases annually; University Maternity Pavillion, with 50 beds; Philadelphia Hospital, containing 1,000 beds; Pennsylvania, Children's and the Southeastern Hospital and Dispensary. Special attention is paid to bedside instruction and to thoroughly practical work. Applicants for admission must furnish evidence of the education required to enter the academic departments of the university. The buildings known as Medical Hall, Medical Laboratory Building, the laboratories of Pathology, Physiology and Pharmacology, the Laboratory of Hygiene, the Wistar Institute of Anatomy, and the Wm. Pepper Clinical Laboratory supply excellent laboratory and lecture-room facilities and are well equipped. The course embraces study for four years of nine months each. The total fees for each year are $200, with a matriculation fee of $5 for the first year. The Dean is Dr. Charles H. Frazier. Total enrolment for 1904-5 was 540; graduates, 116. The next session opens Sept. 29, 1905, and closes June 20, 1906.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1825, and has a faculty of 29 professors and 81 lecturers, demonstrators, etc., a total of 110. Jefferson Hospital, together with its maternity Department, are used exclusively by students of the school for clinical study. Bedside instruction is given daily to small sections of the senior class. In addition, the following hospitals are open for study of clinical cases: Pennsylvania, Philadelphia, St. Joseph's, German, Municipal and Willis Eye hospitals. The course of study covers graded work of four years of eight months each. The laboratories are large and well equipped, a new five-story laboratory building having recently been added; the lecture rooms and amphitheaters are also ample. A new fire-proof hospital is now building, to cost $1,000,000, to be finished in 1906. The tuition is $180 a year, with a matriculation fee of $5, paid but once. The Dean is Dr. James W. Holland. The total number of students for 1904-5 was 676; graduates, 179. The next session opens Sept. 25, 1905, and closes June 1, 1906.

MEDICO-CHIRURGICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1881, and has a faculty made up of 25 professors and 55 assistants, lecturers, etc., 80 in all. Opportunities for clinical study are offered exclusively to students of this school by the Medico-Chirurgical Hospital, with 125 beds, and its children's and maternity hospital, having 30 beds. In common with other schools, the following are used: Philadelphia, Pennsylvania, German, Samaritan, St. Joseph's, St. Agnes', St. Mary's, Methodist, Jewish and the Philadelphia Lying-in hospitals. This school is a member of the Association of American Medical Colleges. With new laboratories, lecture rooms, a modern hospital and fine clinical amphitheater, this college is amply provided and the equipment is good. The work embraces four years of eight months each. Fees: $150 per annum; matriculation, $5, payable once. The Dean is Dr. Seneca Egbert. Total enrolment, 1904-5 was 481; graduates, 86. The next session opens Sept. 25, 1905, and will close June 2, 1906.

WOMAN'S MEDICAL COLLEGE OF PHILADELPHIA.—This school was organized in 1850, and has a faculty of 10 professors and 38 assistants, lecturers, etc., in all 48. Clinical facilities are offered by the Hospital of the Woman's Medical College of Pennsylvania, Woman's Hospital, West Philadelphia Hospital for Women, German, Jewish, Children's and Philadelphia hospitals, Presbyterian hospital, Wills Hospital for Diseases of the Eye, the Howard Hospital and the Philadelphia Lying-in Charity. This school is a member of the Association of American Medical Colleges. The lecture room and laboratory equipment is good. The curriculum covers four years of eight months each. Fees: First year, $140; second, $145; third, $135.50, and $100.50 for the fourth year. The Dean is Dr. Clara Marshall. Total enrolment for 1904-5 was 151; graduates, 42. The next session begins Sept. 27, 1905, and will end may 23, 1906.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL.—Homeopathic. This was organized in 1848, and has a faculty of 17 professors and 56 lecturers, instructors, etc., in all 73. Hahnemann College Hospital and Pennsylvania Hospital furnish material for clinical work. The requirements for admission are those established by the Intercollegiate Committee of the American Institute of Homeopathy. The work covers four years of thirty-two weeks each. Fees: For each year, $150; matriculation, $5. Total number of students for 1904-5 was 164; graduates, 44. The Dean is Dr. Charles M. Thomas. The next session begins Sept. 25, 1905, and will end May 24, 1906.

MEDICAL DEPARTMENT OF THE TEMPLE COLLEGE.—This department was organized in 1901, and has a faculty of 18 professors and 22 assistants, etc., a total of 40. Instruction is given in the afternoon and evening, and the course extends over five years of nine months each. The fees are $125 per year. The Dean is Dr. Newton Snively. The enrolment for 1904-5 was 87; graduates, 2. School opens Sept. 18, 1905, and closes June 15, 1906.

Pittsburg.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.—This is the Medical Department of the Western University of Pennsylvania, and was organized in 1886. The faculty is composed of 38 professors and 54 associates, assistants, etc., 92 in all. Clinical material for study is furnished by a college dispensary, and the Emma Kaufman Clinic, Helneman Maternity Hospital, Mercy, South Side, Passavant and St. John's hospitals. This school is a member of the Association of American Medical Colleges. The course of study embraces graded work for four years of nine months each. Special attention is given to practical bedside work. The total fees are $130 for each year. The Dean is Dr. J. C. Lange. Total enrolment for 1904-5 was 281; graduates, 53. The next session begins Oct. 1, 1905, and will close June 1, 1906.

PHILIPPINE ISLANDS.

Manila.

UNIVERSITY OF SAINT THOMAS MEDICAL DEPARTMENT.—The University was founded by a papal decree in 1587, and the medical school was added in 1871. The faculty consists of 81 teachers. The course extends over a period of six years of nine months each. The first year is a preparatory one, devoted to the teaching of physics, chemistry and biology. The degree of licenciado is conferred at the conclusion of the fifth year, and the degree of doctorado at the end of the sixth year, during which only special work is done. This last year is optional, the degree of licenciado entitling the holder to all the rights and privileges of the medical practitioner. The degree is equivalent to the English M.D. Rector of the University is Dr. Fr. Raymundo Velasques; the Secretary of the medical department is Lic. Blas C. Alcuas. Total registration for 1903-4 was 68; graduates, 14. The course began July 2, 1904, and ended March 7, 1905.

SOUTH CAROLINA.

South Carolina, population 1,340,316, has one medical college, situated in Charleston, a city of 55,807 people. Board and room can be obtained for from $12 to $16 a month.

Charleston.

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA.—This school was founded in 1823. The faculty is made up of 10 professors and 10 assistants, etc., 20 in all. The clinical facilities are those offered by the City Hospital, where surgical, obstetrical and medical instruction is given. Applicants for matriculation must show a diploma of graduation from some literary or scientific institution of learning or a certificate from some legally constituted high school. The course covers four years of six months each. The total fees for each of the first two years are $100, and $75 each for the last two. The Dean is Dr. Francis L. Parker. Total enrolment for 1904-5 was 87; graduates, 28. The next session opens Oct. 1, 1905, and closes April 15, 1906.

TENNESSEE.

Tennessee, population 2,020,616, has ten medical colleges. Of these the Medical Department of the University of Nashville, Vanderbilt University Medical Department, University of Tennessee Medical Department, and Meharry Medical College are situated in Nashville, a city with a population of 80,865. The City Hospital, containing 100 beds, is used by all the schools in common for clinical study. Board and lodging cost from $3 to $4 a week.

V 45
1905

Knoxville, population 32,637, contains two colleges, Tennessee Medical College and Knoxville Medical College. The cost of room and board in that city is from $2.50 to $4 a week.

Chattanooga Medical College and Chattanooga National Medical College are situated in Chattanooga, a city of 30,154 people. Board and lodging cost there from $2 a week upward.

Memphis Hospital Medical College is located in the growing city of Memphis, population 102,320. Good board can be obtained for from $3 to $4 a week.

The University of West Tennessee is in Jackson, whose population is 15,000.

The other school, the Sewanee Medical College, is located at Sewanee, a mountain town of 1,200 people.

Nashville.

UNIVERSITY OF NASHVILLE MEDICAL DEPARTMENT.—This school, established in 1850, has a faculty of 12 professors and 11 lecturers, assistants, etc., in all 23. This school is a member of the Southern Medical College Association. The course of study covers four years of twenty-six weeks each. The tuition fee for each of the four years is $95. The Dean is Dr. William G. Ewing. Total enrolment for 1904-5 was 317; graduates, 75. The next session begins Oct. 2, 1905, and ends March 30, 1906.

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874, and in 1893, when the present medical building was completed, the course was extended, the standard raised. The present faculty of 33 consists of 20 professors and 15 lecturers, etc. The school is a member of the Southern Medical College Association. The course covers four years of seven months each. The minimum entrance requirement is a high school diploma or its equivalent. The total fees for the first three years are $105 each, and $130 for the fourth year. The Dean is Dr. William L. Dudley. Total enrolment for 1904-5 was 159; graduates, 35. The next session begins on or about October, 1905, and ends in April, 1906.

UNIVERSITY OF TENNESSEE MEDICAL DEPARTMENT.—This was organised in 1876 as the Nashville Medical College; its present relations were assumed in 1879. The faculty is composed of 20 professors and 5 lecturers, assistants, etc., 25 in all. The school is a member of the Southern Medical College Association. The course of study includes work for four years of six months each. The total fees for each of the first three years are $65 and $90 for the fourth year. The Dean is Dr. Paul F. Eve, 614 Broad St. Total enrolment for 1904-5 was 164 students; graduates, 32. The next session begins Oct. 2, 1905, and ends April 2, 1906.

MEHARRY MEDICAL COLLEGE.—Colored. This school was organised in 1876 as the Medical Department of Central Tennessee College, now Walden University, "for the purpose of furnishing to the colored people of the South an opportunity of obtaining a medical education." The faculty is made up of 10 professors and 12 instructors, demonstrators, etc., 22 in all. The work embraces a four-year graded course, seven months to the year. The total fees for the first three years are $40 each, and $50 for the fourth year. The Dean is Dr. G. W. Hubbard. Total registration for 1904-5 was 328; graduates, 59. The next session begins Sept. 1, 1905.

Knoxville.

TENNESSEE MEDICAL COLLEGE.—This school was organised in 1889, and has a faculty of 14 professors and 12 assistants, 26 in all. A new building with large and well-fitted laboratories has been completed. City General Hospital and a fee dispensary supply material for study of clinical cases. This school is a member of the Southern Medical College Association. The curriculum includes graded work for four years of seven months each. Fees: Matriculation, $5; annual fee, $50; graduation fee, $25. The Secretary is Dr. S. L. Jones. Total number of students for 1904-5 was 93; graduates, 13. The next annual session begins Nov. 1, 1905, and closes June 1, 1906.

KNOXVILLE MEDICAL COLLEGE.—Colored. This school was established in 1900, following the discontinuance of the Medical Department of Knoxville College, organised in 1895. The teaching force comprises 12. The course covers four years of seven months each. Fees: $40 per year. The Secretary is Dr. H. M. Green. Total number of students for 1904-5 was 47; graduates, 6. The next session opens Nov. 10, 1905, and closes June 1, 1906.

Chattanooga.

CHATTANOOGA MEDICAL COLLEGE.—This is the Medical Department of Grant University, and was organised in 1889. The faculty consists of 10 professors and 16 instructors, demonstrators, etc., total 26. Adequate clinical facilities are afforded by the wards of Baroness Erlanger Hospital, a county asylum, an outdoor clinic maintained in the college building, and all material furnished by the city physician's office which the faculty desire to utilise. The scholastic requirements are those of the Southern Medical College Association, of which this school was a charter member, and to which it belongs. These requirements involve a strictly graded course covering four years of six months each. The total fees approximate $55 each session. The trustees materially added to the general facilities of the institution by the erection of another fine four-story building of brick and stone for the medical department three years ago, wherein much modern and elaborate equipment has been installed. The Dean is Dr. E. A. Cobleigh. The total enrolment for the session of 1904-5 was 268; graduates, 39. The next session opens about Oct. 1, 1905, and ends about April 7, 1906.

Memphis.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—This school, organised in 1873, has a faculty of 10 professors and 18 assistants, besides quiz masters. Excellent clinical facilities are furnished by the City Hospital, Presbyterian Hospital, St. Joseph's Hospital and the East End Dispensary, the latter being located in the college building. The course includes graded work for four years of six months each. The total fees for the first three years are $65; for the fourth, $90. The Dean is Dr. W. B. Rogers. Total registration for 1904-5 was 476; graduates, 151. The twenty-sixth annual session will begin Oct. 1, 1905, and close April 30, 1906.

Jackson.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF WEST TENNESSEE.—Colored. This school, organised in 1900, has a faculty of 12. The course is four years of seven months each. The fees are $40 per year; graduation, $10 extra. Registration for 1904-5 was 29; graduates, 6. The next session opens Sept. 18, 1905, and closes April 18, 1906.

Sewanee.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF THE SOUTH (Sewanee Medical College).—This school was organised in 1891, and has a faculty of 23. It is a member of the Southern Medical College Association. The course is four years of seven months each. The fees are $65 for each of the first two years, $55 for the third and $80 for the last year. The Dean is Dr. John S. Cain. Total enrolment for 1904-5 was 132: graduates, 36. The fourteenth session commences April 1, 1905, and will close October 25, 1905.

TEXAS.

Texas, population 3,048,710, has seven medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 37,789 inhabitants. Good board and room can be procured for from $15 to $20 a month.

The Medical Department of Fort Worth University is at Fort Worth, population 35,000. The cost of board and room in that city is from $12 to $15 a month.

The Baylor University College of Medicine, the Medical Department of Southwestern University, the College of Physicians and Surgeons, and the Physio-Medical College of Texas are situated in Dallas, population 55,000.

The Gate City Medical College is situated in Texarkana.

Dallas.

BAYLOR UNIVERSITY COLLEGE OF MEDICINE.—This is a new name for the University of Dallas Medical Department, which was organised in 1901. In June, 1905, it became the Medical Department of Baylor University at Waco. The faculty numbers 20 professors and 18 assistants, total 38. Parkland Hospital, with 90 beds; St. Paul's Sanitarium, Baptist Memorial Hospital and a college dispensary and hospital are utilised for clinical study. The course covers four years of seven months each. The school is a member of the Association of Southern Medical Colleges. The fees are $75 for each of the four years, with a matriculation fee of $5 paid once, and a graduation fee of $25. The Dean is Dr. E. H. Cary. Total registration for 1904-5 was 132; graduates, 36. The next session opens Oct. 2, 1905, and closes May 1, 1906.

Galveston.

UNIVERSITY OF TEXAS MEDICAL DEPARTMENT.—This department of the State University was organised in 1891, and has a faculty of 27. The John Sealy Hospital, also having an outdoor department, and St. Mary's Infirmary supply good material for clinical study. The requirements for admission are proof, either by certificate or examination, that the candidate is sufficiently proficient in English, including grammar, composition and rhetoric; mathematics through plane geometry and algebra, including quadratics, and general history. The curriculum embraces graded work for four years of eight months each. Laboratories of chemistry, physiology, pharmacology, anatomy, pathology, bacteriology, histology, pharmacy and clinical medicine, completely equipped for practical work by students. Fees, to residents of the state: first year, $50; second and third, each $20, and $5 for the fourth. Non-residents of the state are required to pay an additional fee of $50 each year. The President is Dr. William L. Prather; the Dean is Dr. William S. Carter. Total registration for 1904-5 was 199; graduates, 23. The next session begins Oct. 7, 1905, and ends May 31, 1906.

Ft. Worth.

MEDICAL DEPARTMENT OF FORT WORTH UNIVERSITY.—This school was organised in 1894, and has a faculty of 15 professors and 17 lecturers, assistants, etc., in all 32. Clinical facilities are supplied by St. Joseph's Hospital, with 200 beds; the Benevolent Home, containing 75 beds; the Gelia Collins' Rescue Home, having 50 beds, and a college dispensary. The school is a member of the Southern Medical College Association. The course covers four years of six months each. The total fees for each of the first three years are $75 and $100 for the fourth year. The Dean is Dr. Frank Gray. The total enrolment for 1904-5 was 191; graduates, 21. The next session opens Oct. 2, 1905, and closes April 6, 1906.

SOUTHWESTERN UNIVERSITY MEDICAL COLLEGE.—This is the Medical Department of Southwestern University and was organized in June, 1903. It has a faculty of 19 professors and 19 instructors, total 37. The course of instruction is graded and covers four years in medicine and two in pharmacy. Requirements for admission are equivalent to those prescribed by the Association of American Medical Colleges. The fees are: Matriculation, $5, paid once; annual tuition, $75; graduation, $25. The hospitals represented by the faculty and open for clinical teaching are: St. Paul's Sanitarium, City Hospital, Children's Home, Rescue Home, Woman's Home, St. Joseph Orphanage, St. Matthew's Home for Children, Dr. E. K. Leake's Private Infirmary, Out Door Clinic of the Settlement Home and Presbyterian Home for Children. The Dean is Dr. John O. McReynolds. Total registration 1904-5 was 65; graduates, 14. The third session opens Oct. 2, 1905, and closes May 3, 1906.

COLLEGE OF PHYSICIANS AND SURGEONS.—This school was founded in 1904, and in 1905 the name was changed to College of Physicians and Surgeons. It has a total teaching staff of 15. The course of instruction extends over four years of six months each. The requirements for admission are the same as those prescribed by the Association of Southern Medical Colleges. Clinical instruc-

tion is given in the City Hospital, St. Paul Sanitarium and the college dispensary. The fees for the first three years are $80, and $105 for the fourth year. The Dean is Dr. A. C. Bell. Total registration for 1904-5 was 108; graduates, 17. The next session begins Oct. 3, 1905, and closes April 3, 1906.

PETARO-MEDICAL COLLEGE OF TEXAS.—This college was organized in 1902. It has a faculty of 24 professors and 4 assistants, total 28. The course is four years of thirty weeks each. The fees are, first year, $70; fourth year, $85; other years, $65. Enrolment 1904-5 was 42; graduates, 5. The Secretary is Dr. R. L. Spann. The next session opens Oct. 15, 1905, and closes May 15, 1906.

Texarkana.

GATE CITY MEDICAL COLLEGE.—The length of each course is seven months. The faculty numbers 20 professors and assistants. Registration 1904-5 was 109; graduates, 26. The Dean is Dr. W. Decker. The next session begins Oct. 26, 1905, and ends May 4, 1906.

VERMONT.

Vermont, population 343,641, has one medical school, located at Burlington, a town of about 20,000 people. Board and room costs from $3.50 to $5 a week.

Burlington.

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE.—This school was organized in 1822, but suspended from 1836 until 1854, when it was reorganized. The faculty consists of 20 professors and 21 assistants, instructors, etc., in all 41. The Mary Fletcher Hospital and a free dispensary furnish material for clinical instruction. Applicants for admission must be graduates of a four-year high school course or take an examination to show equivalent educational qualifications. The laboratory and lecture-room space and equipment are ample. A new and commodious college building is nearly completed. The course of study embraces graded work for four years of seven months each. The total fees for each of the first three years are $115 and $140 for the fourth year. The Dean is Dr. C. S. Forbes; Secretary, H. L. Whitcomb. Total registration of students for 1904-5 was 185; graduates, 48. The fifty-third session begins Dec. 2, 1905, and ends June 27, 1906.

VIRGINIA.

Virginia, population 1,854,184, has three medical colleges, situated in Charlottesville (population 6,449) and Richmond (population 85,050). The clinical facilities in Richmond are good. Board and room can be obtained for $18 a month, and upward, in Charlottesville, and from $12 to $20 a month in Richmond.

Charlottesville.

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—This school was organized in 1827, and has a faculty of 24. A free dispensary and the new four-story hospital furnish clinical facilities. The requirements for admission are those of the Association of American Medical Colleges. The course is four years of nine months each. Fees: First year, $110; second, $100; third, $80, and $60 for the fourth year. Total enrolment for 1904-5 was 145; graduates, 38. The eighty-first session opens Sept. 14, 1905, and closes June 13, 1906.

Richmond.

MEDICAL COLLEGE OF VIRGINIA.—This school was organized in 1838 as the Medical Department of Hampden Sidney College, Virginia. In 1854 it was granted a charter by the Legislature of Virginia as an independent institution under its present name. In 1860 the college and its appurtenances was deeded to the State of Virginia in consideration of an appropriation on the part of the state of a sufficient sum to build a hospital, since which time it has continued as a state institution. During the war between the states only medical college in the Confederacy which did not close its doors. It held two sessions a year during this period, and a large proportion of the surgeons of the Confederate Army were graduates of this school. Clinical material was formerly furnished by the Old Dominion Hospital, but more recently by the Memorial Hospital, opened in July, 1903, and the City Free Dispensary, both of which are under the exclusive control of this college. An outside obstetric service, the State Penitentiary Hospital, the City Almshouse Hospital and other public charities and asylums of the city afford ample opportunity for additional clinical work. This school is a member of the Southern Medical College Association. The buildings are large and numerous and contain well-equipped laboratories and amphitheaters. The course embraces four years of nearly eight months each. The fees are $85 for each year, with an additional graduation fee of $30. The Dean is Dr. Christopher Tompkins. Total registration for 1904-5 was 209; graduates, 82. The next session begins Sept. 24, 1905, and will end May 16, 1906.

UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1893, and has a faculty of 19 professors, 41 lecturers, assistants, etc., a total of 60. Good clinical facilities are furnished by Virginia Hospital, with a maternity department and annex, which was built especially for the purpose of affording bedside instruction, and is owned and operated by the college; Richmond Eye, Ear and Throat Infirmary, containing 34 beds; the City Hospital, City Jail, State Penitentiary, and a college dispensary. Matriculation is in accord with the rules of the Association of American Medical Colleges, and of the Southern Medical College Association, to both of which this college belongs. The laboratory and lecture-room spaces and equipment are ample, and some of the instructors devote their entire time to the laboratories. The school lays especial importance on the careful instruction and guidance of each student. The curriculum covers four years of thirty-four weeks each. The total fees are $85 for each year. The President is Dr. Stuart McGuire; the Dean is Dr. Landon B. Edwards, Richmond. Total enrolment for 1904-5 was 223; graduates, 48. The next session begins Sept. 26, 1905, and ends May 24, 1906.

WEST VIRGINIA.

West Virginia, population 958,800, has one medical college, College of Medicine of the West Virginia University, located at Morgantown, a city of 10,000 inhabitants.

Morgantown.

WEST VIRGINIA UNIVERSITY COLLEGE OF MEDICINE.—This school was organized in 1903, and gives only the first two years of the medical course. Each college term extends over nine months. The degree of M.D. is granted students after they finish the third and fourth years in Baltimore at the College of Physicians and Surgeons. The faculty consists of 5 professors and 4 assistants, 9 in all. The school is a member of the Association of American Medical Colleges. Dr. J. S. Simpson is the Dean and A. J. Colcott the Secretary. Total registration in 1904-5 was 36. Next session begins Sept. 21, 1905, and closes June 15, 1906.

WISCONSIN.

Wisconsin, poplation 2,069,042, has two medical colleges, the Milwaukee Medical College and Wisconsin College of Physicians and Surgeons. They are both situated in Milwaukee, a city of 300,000 people. Clinical facilities are furnished them in common by the County Hospital, with 300 beds, and the Milwaukee Hospital for the Insane. Board and lodging can be had for from $3 to $5 a week.

Milwaukee.

MILWAUKEE MEDICAL COLLEGE.—This school was organized in 1893, and has a faculty of 36 professors and 27 lecturers, instructors, etc., a total of 63. Good clinical material is furnished by Trinity and the County hospitals, Milwaukee Hospital for the Insane, and a college dispensary. This school is a member of the Association of American Medical Colleges. Ample laboratory and amphitheater facilities are afforded. The course covers four years of eight months each. The total fees are $125 each for the first three years and $135 for the fourth year. The President is Dr. William H. Earles. Total number of students for 1904-5 was 174; graduates, 38. The twelfth session begins Oct. 2, 1905, and will close about June 4, 1906.

WISCONSIN COLLEGE OF PHYSICIANS AND SURGEONS.—This college was organized in 1905, and has a faculty composed of 21 professors and 25 associates, assistants, etc., a total of 46. St. Joseph's Hospital, containing 150 beds; the college dispensary, the Milwaukee County Hospital and the Hospital for the Insane supply facilities for clinical study. The school is a member of the Association of American Medical Colleges. The laboratories and lecture rooms are well equipped. The curriculum includes four years of eight months each. Fees: Matriculation, paid once, $5; general ticket, $100; for the use of the microscope, a fee of $2 is charged for each course. The Secretary is Dr. W. H. Washburn. Total enrolment for 1904-5 was 74; graduates, 19. The next session begins Sept. 19, 1905, and ends May 14, 1906.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES.

The requirements for admission and graduation to be maintained by colleges holding membership in this association and the minimum course of study prescribed, are as follows:

ARTICLE III.

SECTION 1.—Every college holding membership in this Association shall demand of each student, under the condition hereinafter stated, as a minimum requirement for admission to the medical course:

(a) A bachelor's degree from an approved college or university.

(b) A diploma from an accredited high school, normal school or academy requiring for admission evidence of the completion of an eight-year course in primary and intermediate grades, and for graduation not less than four years of study embracing not less than two years (4 points) of foreign language, of which one must be Latin, two years (4 points) of mathematics, two years (4 points) of English, one year (2 points) of history, two years (4 points) of laboratory science, and six years (12 points) of further credit in language, literature, history or science.

(c) An examination in the following branches:

1. Required (18 points): Mathematics (4 points); English (4 points); History (2 points); Language (2 must be Latin), 4 points; Science, (taken from physics, chemistry, botany, zoology), 4 points.

2. Optional (to 12 points): English, 2 points, History, 6 points; Languages, 6 points; Manual Training, 2 points; Mechanical Drawing, 1 point; Natural Science (botany, biology, zoology), 2 points; Physical Science (chemistry, physics), 2 points; Trigonometery, 1 point; Astronomy (1), Civics (1), Geology (1), Physical Geography (1), Physiology and Hygiene (1), Political Economy (1).

(One point in any subject in a high school or academic course demands not less than five periods per week of forty-five minutes each for eighteen weeks).

(d) Certificates from reputable instructors recognized by the superintendent hereinafter to be mentioned or by any state board of medical examiners duly authorized by law, may be accepted in lieu of any part of this examination.

SEC. 2.—This examination must be conducted by or under the authority of the superintendent of public instruction of the city or state in which the college is located. In no case shall it be conducted by any person connected with the faculty, medical or otherwise, of the institution to which the student is seeking admission.

SEC. 3.—A student may be allowed to enter on his medical work conditioned in not more than six points, and these conditions must be removed by satisfactory examination before he is allowed to enter on the second year of his medical course.

V 45
1905

SEC. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the fourth year of their course, but no member of this Association shall admit a student to advanced standing without first communicating with the college from which such student desires to withdraw, and receiving from the dean of such college a direct written communication certifying to the applicant's professional and moral qualifications, and to the exact work he has done in said college.

SEC. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

SEC. 6.—Credit may be given to the holder of a Bachelor's Degree from an approved college or university for any work in the medical branches which he has successfully completed in his college course, only so far as it is the full equivalent of corresponding work in the medical curriculum. The holder of such Bachelor's Degree may also be given time credits of not exceeding one year, provided that such student has had at least 40 hours in physics, 144 hours in chemistry, 24 hours in osteology, 292 hours in human or comparative anatomy, 124 hours in histology, 65 hours in embryology, 145 hours in physiology and 46 hours in materia medica; provided that the applicant for such time credits satisfies the professors of the chairs mentioned in the medical school as to his proficiency in their respective studies, and satisfies the proper examiner, as provided for in Section 2, Article III, that his studies for which the degree was conferred include the above requirements. Such student may be allowed to complete a course for the medical degree in not less than 21 months, provided he completes the remainder of the medical curriculum in that time.

SEC. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

SEC. 8.—Each student shall be obliged to attend 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other system, and no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

ARTICLE V.

SECTION 1.—The entire course of four years shall consist of at least 4,000 hours, divided into the subjects as shown in the following table, and no college shall be recognized that falls below this standard by over 20 per cent. in any one branch or over 10 per cent. in the total. Laboratory or clinic hours may be substituted for didactic hours.

CURRICULUM.

	No. of Hours of Lectures.	Hours of Laboratory.	Hours of Clinics.	Total.
Histology	30	60	..	90
Embryology	30	60	..	90
Osteology	30	..	..	30
Anatomy	100	220	..	320
Physiology	100	120	..	200
Chemistry and Toxicology	100	200	..	300
Materia Medica	40	20	..	60
Pharmacology	40	20	..	60
Therapeutics	90	..	..	90
Bacteriology	40	100	..	140
Pathology	100	140	..	240
Medical Zoology, Postmortem Work and Clinical Microscopy	30	60	..	90
Physical Diagnosis	20	..	80	100
Practice of Medicine	180	..	360	540
Surgery	180	..	360	540
Obstetrics	100	..	60	160
Gynecology	50	..	110	160
Pediatrics	40	..	60	100
Eye and Ear	30	..	30	60
Nose and Throat	30	..	30	60
Mental and Nervous Diseases	60	..	60	120
Electro-Therapeutics	30	..	40	60
Genito-Urinary Diseases	30	..	30	60
Dermatology and Syphilis	20	..	20	40
Hygiene and Public Health	30	..	..	30
Dietetics	30	..	..	30
Medical Jurisprudence	30	..	..	30
	1,750	1,010	1,240	4,000

The following colleges are members:

College of Medicine University of Southern California, Los Angeles, Cal.; University of California Medical Department, San Francisco, Cal.; Colorado School of Medicine, University of Colorado, Boulder, Colo.; Denver and Gross College of Medicine, Medical Department of the University of Denver, Denver, Colo.; Yale University Department of Medicine (Yale Medical School), New Haven, Conn.; George Washington University Department of Medicine, Washington, D. C.; Georgetown University School of Medicine, Washington, D. C.; Howard University Medical Department, Washington, D. C.; American Medical Missionary College, Battle Creek, Mich., and Chicago, Ill.; College of Medicine of the University of Illinois (College of Physicians and Surgeons), Chicago, Ill.; Illinois Medical College, Chicago, Ill.; Northwestern University Medical School, Chicago, Ill.; Fort Wayne College of Medicine, Ft. Wayne, Ind.; Central College of Physicians and Surgeons, Indianapolis, Ind.; Medical College of Indiana, University of Indianapolis, Indianapolis, Ind.; University of Indiana School of Medicine, Bloomington, Ind.; Drake University College of Medicine, Des Moines, Iowa; College of Medicine University of Iowa, Iowa City, Iowa; Keokuk Medical College, College of Physicians and Surgeons, Keokuk, Iowa; Sioux City College of Medicine, Sioux City, Iowa; Kansas Medical College, Medical Department of Washburne College, Topeka, Kan.; School of Medicine University of Kansas, Lawrence, Kan.; Hospital College of Medicine, Louisville, Ky.; Kentucky School of Medicine, Louisville, Ky.; Kentucky University Medical Department, Louisville, Ky.; Flint Medical College, Medical Department New Orleans University, New Orleans, La.; Baltimore Medical College, Baltimore, Md.; College of Physicians and Surgeons, Baltimore, Md.; Johns Hopkins University Medical Department, Baltimore, Md.; University of Maryland School of Medicine, Baltimore, Md.; Woman's Medical College, Baltimore, Md.; College of Physicians and Surgeons, Boston, Mass.; Detroit College of Medicine, Detroit, Mich.; Michigan College of Medicine and Surgery, Detroit, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, Mich.; Hamline University College of Medicine, Minneapolis, Minn.; College of Medicine and Surgery of the University of Minnesota, Minneapolis, Minn.; Medical Department University of Mississippi Oxford, Miss.; University of Missouri Department of Medicine, Columbia, Mo.; Kansas City Medical College, Kansas City, Mo.; University Medical College, Kansas City, Mo.; Medical Department St. Louis University (Marion-Sims-Beaumont College of Medicine), St. Louis, Mo.; St. Louis College of Physicians and Surgeons, St. Louis, Mo.; Washington University Medical Department, St. Louis, Mo.; John A. Creighton Medical College, Medical Department of Creighton University, Omaha, Neb.; University of Nebraska College of Medicine, Lincoln and Omaha, Neb.; University of Buffalo Medical Department, Buffalo, N. Y.; Syracuse University College of Medicine, Syracuse, N. Y.; University of North Carolina Medical Department, Raleigh, and Chapel Hill, N. C.; Wake Forest College School of Medicine, Wake Forest, N. C.; Medical College of Ohio, Medical Department University of Cincinnati, Cincinnati, Ohio; Miami Medical College, Cincinnati, Ohio; Cleveland College of Physicians and Surgeons, Medical Department Ohio, Wesleyan University, Cleveland, Ohio; Western Reserve University Medical College, Cleveland, Ohio; Ohio Medical University, Columbus, Ohio; Starling Medical College, Columbus, Ohio; Toledo Medical College, Toledo, Ohio; University of Oregon Medical Department, Portland, Ore.; Willamette University Medical Department, Salem, Ore.; Medico-Chirurgical College of Philadelphia, Philadelphia, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, Pa.; Western Pennsylvania Medical College, Medical Department Western University of Pennsylvania, Pittsburg, Pa.; Meharry Medical College, Medical Department Walden University, Nashville, Tenn.; University College of Medicine, Richmond, Va.; University of West Virginia Medical Department, Morgantown, W. Va.; Milwaukee Medical College, Milwaukee, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, Wis.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 1764 Lexington St., Chicago.

SOUTHERN MEDICAL COLLEGE ASSOCIATION.

The following requirements for admission to the freshman year are exacted by the colleges belonging to this Association:

SECTION 3.. He must possess a diploma of graduation from some literary or scientific institution of learning, or a certificate that he has passed the entrance examination to a university, or a certificate from some legally constituted high school (general superintendent of state education, or superintendent of some county board of public education, attesting that he has been regularly examined and is possessed of at least the educational attainments required of first-grade teachers of public schools). The minimum preliminary education required by the Southern Medical College Association shall be, after Jan. 1, 1906, a grammar school education and two years' successful attendance at a recognized preparatory school or a high school, or its equivalent, said equivalent to be determined by a superintendent of public instruction. A student may be given one month from date of his admission to submit his certificate of qualification. And if he fails to possess the requisite educational qualifications in one or more branches, he may matriculate and attend his first course of lectures, but must present the requisite certificate before matriculating in the second course, and all tickets or certificates issued in such cases must have the conditions printed plainly on the face of each. (After Jan. 1, 1906, that part in brackets becomes non-operative.)

The following colleges are members:

Medical Department University of Tennessee, Nashville, Tenn.; Medical Department University of Nashville, Nashville, Tenn.; Medical Department University of the South, Sewanee, Tenn.; Medical Department Vanderbilt University, Nashville, Tenn.; Medical Department Fort Worth University, Fort Worth, Tex.; Medical College of Virginia, Richmond, Va.; Tennessee Medical College, Knoxville, Tenn.; Medical College of Alabama, Mobile, Ala.; Birmingham Medical College, Birmingham, Ala.; University College of Medicine, Richmond, Va.; Medical Department Baylor University, Dallas, Texas; Medical Department, University of Mississippi, Oxford, Miss.; Memphis Hospital Medical College, Memphis, Tenn.; Chattanooga Medical College, Chattanooga, Tenn.

The secretary-treasurer is Dr. G. C. Savage, Nashville, Tenn.

AMERICAN INSTITUTE OF HOMEOPATHY.

The minimum requirements for entrance into the freshman class of all homeopathic medical colleges, as adopted in 1901, are, with abbreviation, as follows:

1. English Composition. Exercise on assigned theme, not less than 200 words. Exercise in reading. Exercise in correction of ungrammatical sentences.

2. Mathematics. Arithmetical exercises in (a) vulgar fractions; (b) decimals; (c) percentage; (d) proportion; (e) square and cube root; (f) weights and measures; (g) decimal system. Mensuration. (a) Definition of terms; (b) exercises under the more fundamental rules.

3. Geography (general facts about North America).

4. History. General, with particular reference to human

(Continued on page 570.)

Name of College.	Estimated population of city in which college is located.	No. of students registered prior to 1904-1905.		Graduates 1904.		Total number of teachers.	Number of weeks in college year.	Total graduates in all college states, 1904.	Total students in all college states, 1904.
		Men	Women	Men	Women				
ALABAMA								47	245
Birmingham Medical College.—R.	38,000	15	...	10	...	29	34	...	....
Medical College of Alabama.—R.	170	31	...	31	...	20	35	...	....
ARKANSAS								28	220
Medical Department Arkansas University.—R.	40,000	217	3	26	2	35	34	...	....
CALIFORNIA								129	620
Cooper Medical College.—R.	400,000	134	21	33	4	61	34	...	....
Medical Department University of California.—R.	"	93	11	15	2	50	36	...	....
California Medical College.—R.	"	31	9	5	3	26	26	...	....
Hahnemann Medical College of the Pacific.—H.	"	24	9	9	7	44	30	...	....
College of Physicians and Surgeons, San Francisco.—R.	"	124	20	26	1	41	30	...	....
Oakland College of Medicine and Surgery.—R.	100,000	10	2	...	...	28	36	...	....
College of Medicine, University of Southern California.—R.	102,479	105	10	22	1	48	34	...	....
College of Physicians and Surgeons, Los Angeles.—R.	"	23	2	6	...	30	34	...	....
COLORADO								43	108
Denver and Gross College of Medicine.—R.	175,000	108	7	29	2	31	32	...	....
Denver Homeopathic College.—H.	"	20	9	5	1	33	27	...	....
Colorado School of Medicine.—R.	6,150	45	6	6	...	27	36	...	....
CONNECTICUT								22	138
Yale University Medical Department.—R.	115,000	138	...	22	...	46	36	...	....
DISTRICT OF COLUMBIA								116	584
George Washington University, Department of Medicine.—R.	278,718	298	...	62	...	64	34	...	....
Georgetown University School of Medicine.—R.	"	128	...	32	...	53	35	...	....
Howard University, Medical Department.—R.	"	137	16	20	1	33	34	...	....
GEORGIA								76	411
Atlanta College of Physicians and Surgeons.—R.	89,872	250	...	48	...	43	34	...	....
Georgia College of Eclectic Medicine and Surgery.—E.	"	52	1	14	...	16	34	...	....
Medical College of Georgia.—R.	39,441	108	...	14	...	25	34	...	....
ILLINOIS								797	3,481
American Medical Missionary College.—H.	1,900,000	68	22	14	7	26	36	...	....
Bennett College of Eclectic Medicine and Surgery.—E.	"	92	4	29	1	66	28	...	....
College of Medicine and Surgery.—P.M.	"	62	...	12	...	62	36	...	....
College of Physicians and Surgeons, Chicago.—R.	"	902	52	201	12	144	36	...	....
Hahnemann Medical College and Hospital.—H.	"	230	...	61	...	104	29	...	....
Harvey Medical College.—L.	"	150	30	10	6	73	30	...	....
Hering Medical College.—H.	"	34	14	10	4	31	30	...	....
Illinois Medical College.—R.	"	181	11	55	4	51	27	...	....
Jenner Medical College.—R.	"	96	6	12	1	38	38	...	....
Northwestern University Medical School.—R.	"	853	...	143	...	157	36	...	....
Rush Medical College.—R.	"	403	34	106	6	234	34	...	....
National Medical University	"	232	...	29	...	66	36	...	....
American College of Medicine and Surgery.—R.	"	292	...	34	...	65	30	...	....
Dearborn Medical College, Chicago.—R.	"	173	8	27	2	39	39	...	....
INDIANA								120	539
Central College of Physicians and Surgeons.—E.	169,164	141	5	22	...	59	30	...	....
Medical College of Indiana.—R.	"	262	7	78	...	63	34	...	....
Physio-Medical College of Indiana.—Ph. M.	"	19	3	6	...	30	28	...	....
Eclectic Medical College of Indiana.—E.	"	45	...	5	...	24	30	...	....
Fort Wayne College of Medicine.—R.	45,115	40	3	11	2	34	30	...	....
Indiana University School of Medicine.—R.	7,000	14	...	...	...	11	36	...	....
IOWA								150	680
Drake University College of Medicine.—R.	91,515	56	4	16	2	46	31	...	....
Keokuk Medical College of Physicians and Surgeons.—R.	14,641	219	11	49	1	117	32	...	....
Sioux City College of Medicine.—R.	33,111	53	19	11	3	28	32	...	....
State University of Iowa, Homeopathic Medical Dept.—H.	7,879	41	...	9	...	24	36	...	....
State University of Iowa, Medical Department.—R.	"	249	28	62	3	50	36	...	....
KANSAS								26	178
College of Physicians and Surgeons of Kansas City.—R.	55,000	48	7	7	2	45	28	...	....
Kansas Medical College.—R.	33,608	87	4	16	7	33	38	...	....
School of Medicine, University of Kansas.—R.	10,862	31	1	...	...	18	36	...	....
KENTUCKY								345	1,325
Hospital College of Medicine.—R.	225,000	425	0	93	0	51	30	...	....
Kentucky School of Medicine.—R.	"	199	3	48	1	47	30	...	....
Louisville Medical College.—R.	"	263	...	40	...	27	30	...	....
Louisville National Medical College.—R.	"	34	0	6	1	25	30	...	....
Southwestern Homeopathic Medical College.—H.	"	16	3	6	...	27	26	...	....
Medical Department, University of Louisville.—R.	"	241	7	71	4	38	30	...	....
Kentucky University, Medical Department.—R.	"	340	...	76	...	42	30	...	....
LOUISIANA								90	524
Flint Medical College of New Orleans University.—R.	287,104	57	2	...	...	11	24	...	....
Tulane University, Medical Department.—R.	"	469	...	83	...	49	30	...	....
MAINE								18	93
Medical School of Maine, Bowdoin College.—R.	50,000	93	...	18	...	33	33	...	....
MARYLAND								420	1,681
Baltimore Medical College.—R.	508,957	406	...	96	...	59	33	...	....
Baltimore University School of Medicine.—R.	"	70	...	14	...	25	30	...	....
College of Physicians and Surgeons of Baltimore.—R.	"	296	...	60	...	59	32	...	....
Medical Department Johns Hopkins University.—R.	"	309	22	48	5	82	30	...	....
Southern Homeopathic Medical College.—H.	"	28	5	7	2	24	30	...	....
University of Maryland, School of Medicine.—R.	"	340	...	83	...	60	32	...	....
Woman's Medical College of Baltimore.—R.	"	80	30	9	2	33	32	...	....
Maryland Medical College.—R.	"	207	...	93	...	44	28	...	....
MASSACHUSETTS								171	942
Boston University School of Medicine.—H.	603,163	63	20	12	2	59	33	...	....
College of Physicians and Surgeons.—R.	"	149	19	27	1	30	34	...	....
Harvard University Medical School.—R.	"	307	0	67	0	145	36	...	....
Tufts College Medical School.—R.	"	331	54	62	...	88	32	...	....
MICHIGAN								170	822
Detroit College of Medicine.—R.	300,000	208	...	54	...	92	30	...	....
Detroit Homeopathic Medical College.—H.	"	96	8	10	2	37	32	...	....
Michigan College of Medicine and Surgery.—R.	"	74	4	25	1	57	32	...	....
Grand Rapids Medical College.—R.	87,565	48	2	5	...	38	20	...	....
University of Michigan, Dept. of Medicine and Surgery.—R.	14,509	348	28	58	8	56	34	...	....
University of Michigan, Homeopathic Medical College.—H.	"	53	13	7	3	49	31	...	....
MINNESOTA								85	367
College of Homeopathic Med. and Surg., Univ of Minn.—H.	225,000	15	1	4	...	33	34	...	....
College of Medicine and Surgery, Univ. of Minnesota.—R.	"	219	9	71	...	104	34	...	....
Medical Department of Hamline University.—R.	"	118	5	19	1	45	34	...	....
MISSISSIPPI								...	18
Medical Department University of Mississippi, Oxford.—R.	2,000	17	1	...	...	14	34	...	....

V 45
1905

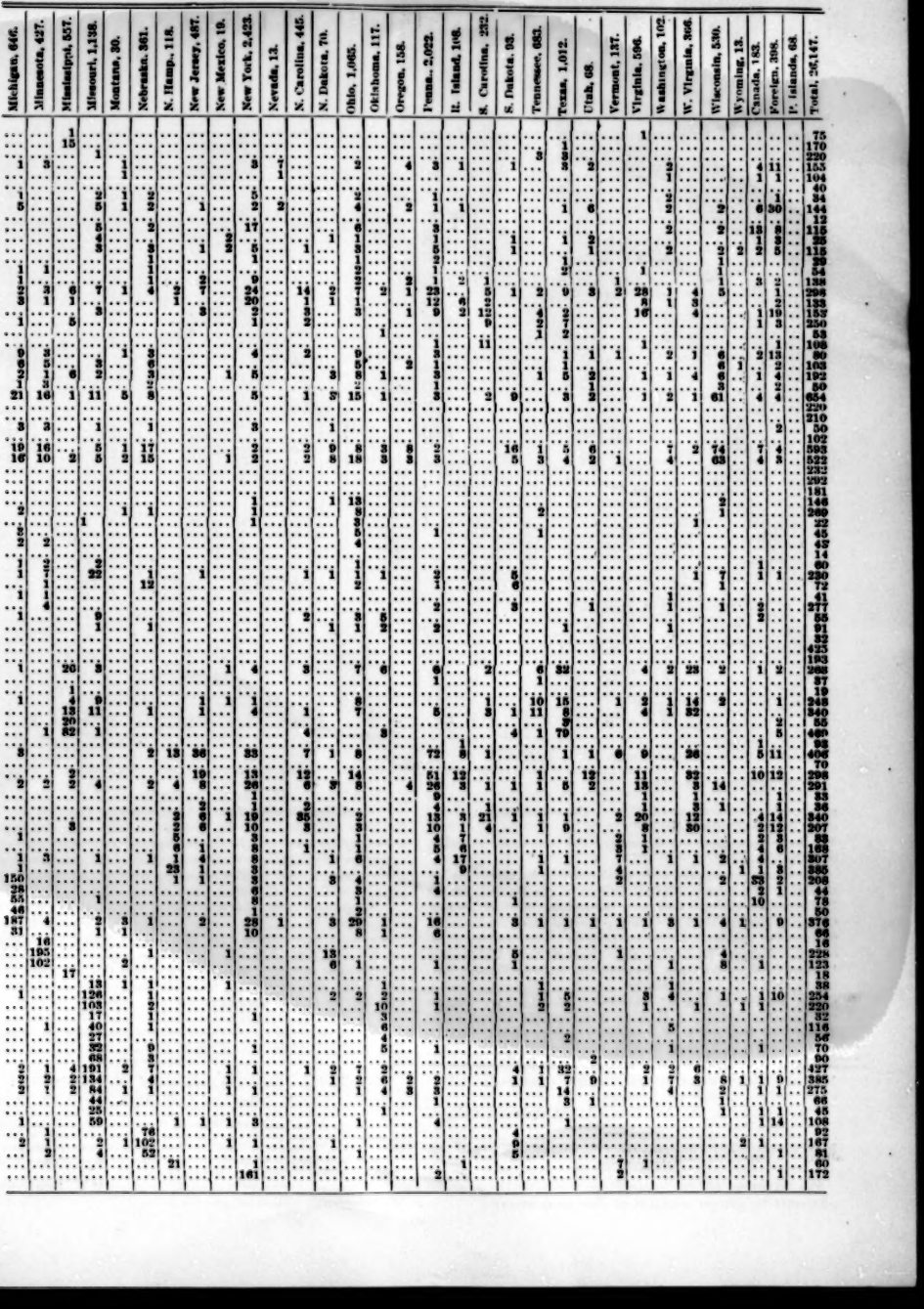
Name of College.	Estimated population of city in which college is located.	No. of students registered session 1904-5.		Graduates, 1905.		Total number of teachers.	Number of weeks in college year.	Total graduates all colleges in state, 1905.	Total students in all colleges in state, 1904-5.
		Men	Women	Men	Women				
MISSOURI								508	2,182
Medico-Chirurgical College.—R.	163,752	38	...	16	...	24	30		
University Medical College of Kansas City.—R.	"	220	...	58	...	77	21		
Kansas City Hahnemann Medical College.—H.	"	23	9	4	6	42	21		
Kansas City Medical College.—R.	"	116	...	44	...	101	28		
Eclectic Medical University.—E.	"	55	1	16	1	25	30		
Central Medical College.—R.	105,000	95	5	14	3	28	28		
Ensworth Medical College.—R.	"	90	...	22	...	32	28		
Barnes Medical College.—R.	575,238	391	36	98	11	90	32		
Medical Department St. Louis University (Marion-Sims Beaumont College of Medicine).—R.	"	385	...	103	...	105	33		
St. Louis College of Physicians and Surgeons.—R.	"	275	...	29	...	39	28		
American Medical College.—E.	"	62	4	16	0	17	28		
Homeopathic Medical College of Missouri.—H.	"	40	5	5	2	28	28		
Medical Department Washington University.—R.	"	254	...	62	...	114	28		
University of State of Missouri.—R.	5,651	101	7	7	1	30	34		
NEBRASKA								76	340
University of Nebraska College of Medicine.—R.	102,555	87	5	27	1	60	30		
John A. Creighton Medical College.—R.	"	104	3	31	2	49	28		
Lincoln Medical College of Cotner University.—E.	40,169	75	6	14	1	36	29		
NEW HAMPSHIRE								13	80
Dartmouth Medical College.—R.	1,584	60	...	13	...	20	32		
NEW YORK								542	2,565
Albany Medical College.—R.	100,000	172	...	52	...	72	30		
College of Physicians and Surgeons.—R.	3,437,202	568	...	135	...	128	30		
Cornell University Medical College.—R.	"	360	32	96	8	211	34		
Eclectic Medical College.—E.	"	85	14	13	...	34	28		
Long Island College Hospital.—R.	"	414	...	73	...	96	32		
New York Homeopathic Medical College and Hospital.—H.	"	110	...	21	...	77	32		
New York Medical College and Hospital for Women.—H.	"	...	34	...	9	42	30		
University and Bellevue Hospital Medical College.—R.	"	391	...	47	...	103	33		
*Medical Department Fordham College New York.—R.	"	...	...	...	...	...	...		
Syracuse University College of Medicine.—R.	108,374	147	7	31	...	54	32		
University of Buffalo, Medical Department.—R.	352,387	218	13	37	...	62	32	56	335
NORTH CAROLINA									
Leonard Medical School.—R.	13,643	136	...	21	...	10	27		
Wake Forest School of Medicine.—R.	"	52	12	...	...	10	34		
North Carolina Medical College.—E.	"	104	31	26	21	31	30		
Medical Department University of North Carolina.—R.	13,643	100	...	9	...	31	35	230	878
OHIO									
Western Reserve University Medical College.—R.	381,768	73	...	19	...	54	28		
Cleveland College of Physicians and Surgeons.—R.	"	76	9	16	...	60	32		
Cleveland Homeopathic Medical College.—H.	"	61	5	23	1	63	31		
Eclectic Medical Institute.—E.	325,902	131	4	35	2	221	28		
Medical College of Ohio.—R.	"	190	1	53	...	78	35		
Pulte Medical College.—H.	"	13	5	5	...	21	28		
Miami Medical College.—R.	"	82	3	21	1	58	32		
Ohio Medical University.—R.	125,560	152	6	37	0	35	32		
Starling Medical College.—R.	"	106	...	30	...	38	32		
Toledo Medical College.—R.	131,822	82	1	7	0	30	32		
OKLAHOMA									15
University of Oklahoma, Norman.—R.	3,682	8	...	...	...	8	34		
Epworth University College of Medicine, Oklahoma City.—R.	35,000	6	1	...	...	27	27	33	153
OREGON									
University of Oregon, Medical Department.—R.	125,000	90	12	24	2	28	28		
Medical Department Willamette University.—R.	10,000	50	...	7	...	19	24		
PENNSYLVANIA								522	2,566
Temple College of Philadelphia, Department of Medicine.—R.	1,293,697	47	...	4	...	40	32		
University of Pennsylvania, Department of Medicine.—R.	"	546	...	116	...	137	32		
Hahnemann Medical College and Hospital.—H.	"	184	...	44	...	73	33		
Jefferson Medical College.—R.	"	676	...	179	...	111	34		
Woman's Medical College of Pennsylvania.—R.	"	...	151	...	42	48	32		
Medico-Chirurgical College of Philadelphia.—R.	"	461	...	86	...	100	32		
Western Pennsylvania Medical College.—R.	321,616	274	7	52	1	94	34		
PHILIPPINE ISLANDS								14	68
San Tomaso University, Manila.—R.	150,000	68	...	14	...	61	36		
SOUTH CAROLINA								33	87
Medical College of State of South Carolina.—R.	55,807	85	2	28	...	20	27		
TENNESSEE								364	2,015
Tennessee Medical College.—R.	32,637	92	...	13	...	29	28		
Knoxville Medical College.—R.	"	230	11	4	2	11	28		
Medical Department of University of Nashville.—R.	80,865	317	...	75	...	23	34		
Vanderbilt University, Medical Department.—R.	"	158	...	35	...	35	28		
University of Tennessee Medical Department.—R.	"	164	...	44	...	78	32		
Meharry Medical College.—R.	"	279	2	57	2	29	28		
Memphis Hospital Medical College.—R.	102,320	476	...	51	...	28	28		
University of the South Medical Department.—R.	1,200	182	...	36	...	23	25		
Chattanooga Medical College.—R.	20,154	264	4	58	1	30	28		
University of West Tennessee Medical Department.—R.	15,000	33	...	6	...	12	24		
TEXAS								139	762
Medical Department Fort Worth University.—R.	35,000	190	1	21	...	32	26		
University of Texas, Department of Medicine.—R.	37,789	193	5	23	...	27	34		
Baylor University College of Medicine.—R.	55,000	129	3	34	2	35	25		
Physio-Medical College of Texas.—Ph.M.	"	48	6	5	...	28	28		
Southwestern University Medical College, Dallas.—R.	55,000	46	2	14	...	37	30		
College of Physicians and Surgeons, Dallas.—R.	"	67	5	13	1	20	24		
Gate City Medical College, Texarkana.—R.	5,000	109	...	26	...	20	30		
VERMONT								48	185
University of Vermont College of Medicine.—R.	20,000	185	...	48	...	41	26		
VIRGINIA								127	577
Medical College of Virginia.—R.	85,050	209	...	88	...	43	30		
University College of Medicine.—R.	"	223	...	46	...	60	32		
University of Virginia Department of Medicine.—R.	6,449	145	...	41	...	21	34		
WEST VIRGINIA									36
University of West Virginia, Morgantown.—R.	2,100	36	...	...	...	9	36		
WISCONSIN								57	248
Milwaukee Medical College.—R.	300,000	189	5	38	...	62	30		
Wisconsin College of Physicians and Surgeons.—R.	"	72	2	19	...	46	30		

* First session begins October, 1905.

Name of College.	Alabama, 548.	Arizona, 9.	Arkansas, 465.	California, 435.	Colorado, 146.	Connecticut, 270	Delaware, 48.	Dist. Colum., 140	Florida, 123.	Georgia, 474.	Idaho, 37.	Illinois, 2,084.	Indian Ter., 219.	Indiana, 881.	Iowa, 916.	Kansas, 493.	Kentucky, 570.	Louisiana, 475.	Maine, 292.	Maryland, 476.	Mass., 1,019.
Birmingham Medical College.—R.	69								3	1											
Medical College of Alabama.—R.	152								2												
Medical Department Arkansas University.—R.		1	188							1			21	1				1			
Cooper Medical College.—R.	1			89							1	2		2	5	2			4		1
Med. Dept. Univ. of California.—R.				97							1									1	
California Medical College.—E.				40																	
Hahnemann Medical Coll. of the Pacific.—H.				7								3		2	2	2					1
College of Phys. and Surg., San Francisco.—R.				45		1						7		3	6	4	1	1	1		2
Oakland Coll. of Med. and Surgery.—R.				12																	
Coll. of Med. Univ. of So. California.—R.				46								5			4			2			
College of Phys. and Surg., Los Angeles.—R.		1		4								1		1	1						
Denver and Gross Coll. of Medicine.—R.				1	52	2						12		3	1	3				1	2
Denver Homeopathic College.—H.				1	15						1	2			1	2					
Colorado School of Medicine				1	34							2		1	6	2			3	1	
Yale University Department of Medicine.—R.						180						2			3				2		13
George Washington Univ. Dept. of Med.—R.	1		2	3	1	2		49	2	5	1	13		6	3	2	5	4	4	23	6
Georgetown Univ. School of Medicine.—R.	1			1		5	2	29				1		1		1	1	1		7	20
Howard University Medical Department.—R.	3		1					34	4	10		2		2		3	1	3		5	1
Atlanta College of Phys. and Surg.—R.	22								12	181			1				2	1			
Georgia Coll. of Eclectic Med. and Surg.—E.	4		3						3	38			1								
Medical College of Georgia.—R.				1	1				4	88											
American Medical Missionary College.—R.				4										1	11	1			1		1
Bennett Coll. of Eclectic Med. and Surg.—E.			1			1					1	48		8	4	1	1				
Illinois Medical College.—R.	1		3							1	1	72	1	39	6	1	3	2	1		1
College of Medicine and Surgery.—Ph.M.				1								27		1	5		1				
College of Physicians and Surgeons.—R.			2	4	1	1		1		1	1	369	1	34	43	10	3	2	1		1
Hahnemann Med. Coll. and Hospital.—H.*																					
Harvey Medical College.—R.												210									
Hering Medical College—H.				2							1	24		5	3	1					
Jenner Medical College.—R.												102									
Northwestern University Med. School.—R.			1	3	2						5	260		23	70	9	2	4			
Rush Medical College.—R.	4	4		9	1	1		1		2	3	170		51	68	20	3		1	2	3
National Medical University*																					
American Coll. of Med. and Surgery.—R.*																					
Dearborn Medical College.—R.												181									
Central College of Physicians and Surgs.—R.												9		118	2						
Medical College of Indiana.—R.				1			1					7		244							
Physio-Medical College of Indiana.—Ph.M.												1		15							
Eclectic Medical College of Indiana.—E.												6		22		3	4				
Fort Wayne College of Medicine.—R.														35							
Indiana University School of Medicine.—R.														14							
Drake University Coll. of Medicine.—R.												1			51	1					
Keokuk Med. Coll. of Phys. and Surgs.—R.				1	1						1	55			111	8					
Sioux City Coll. of Med.—R.												3		1	45						
State Univ. of Iowa, Homeo. Med. Dept.—H.															38						
State Univ. of Iowa, Med. Department.—R.												9			252	1					1
Coll. of Phys. and Surgs. of Kansas City.—R.					1								2			30					
Kansas Medical College.—R.		1		1	2									1		76					
School of Medicine, Univ. of Kansas.—R.																32					
Hospital College of Medicine.—R.*																					
Kentucky School of Medicine.—R.*																					
Louisville Medical College.—R.	10		5		1				3	5		2	8	22	2	9	54	11			
Louisville National Medical College.—R.	2									2			1	6			24				
Southwestern Homeopathic Med. College.—H.														7			11				
Medical Dept. Univ. of Louisville.—R.	2		4			1						6	3	21	2		132	2		3	
Kentucky University Medical Dept.—R.	7		2	1					2	5		3	1	49	3	2	158	3	1		
Flint Med. Coll. of New Orleans Univ.—R.												1						26			
Tulane University, Medical Department.—R.	40		13						8	9		1	4					214			
Medical School of Maine, Bowdoin Coll.—R.																			85		6
Baltimore Medical College.—R.	3			1		22	1	2	2	3		2		2		1	1		16	50	57
Baltimore Univ. School of Medicine.—R.*																					
College of Phys. and Surgs. of Baltimore.—R.	3					15	2			4				3		1			1	42	26
Johns Hopkins Medical School.—R.	7		3	12	2	16	1	4	3	7		2		6	11		5		10	56	6
Southern Homeopathic Medical College.—H.							2	1									1			15	1
Woman's Medical College of Baltimore.—R.						2		1						1					1	15	
University of Maryland, School of Med.—R.			1			4	3		5	11				2		1	1	1		148	6
Maryland Medical College.—R.	5					3	3		2	3			1					4	3	74	5
Boston University School of Medicine.—H.				1					1										4		48
College of Physicians and Surgeons.—R.						3	3			1		1							5	1	112
Harvard University Medical School.—R.	1			6	1	2		1	1			5		1	1	1			11		212
Tufts College Medical School.—R.						5				1									10		322
Detroit College of Medicine.—R.								1			1			3			1				
Detroit Homeopathic Medical College.—H.																					
Michigan College of Med. and Surgery.—R.														2							
Grand Rapids Medical College.—R.																	1				
Univ. of Michigan Dept. of Med. and Surg.—R.	1			2	2	1			1	3	1	20	1	24	9		3				5
Univ of Mich. Homeo. Med. College.—H.												2		3		1			2		
Coll. of Hom. Med. and Surg., U. of Minn.—H.																					
College of Med. and Surg., Univ of Minn.—R.						1						1		1	5						
Medical Dept. of Hamline Univ.—R.																					
Med. Dept., Univ. of Mississippi, Oxford.—R.																		1			
Medico-Chirurgical College.—R.	1		2			1					1	2	1		2	8		1			
Medical Department, Washington Univ.—R.	2		7		3						2	69	2	1	2	4	1	1			
Univ. Med. Coll. of Kansas City.—R.			1	3	2							2	4		5	79					
Kansas City Hahnemann Med. Coll.—H.				1											1	8					
Kansas City Medical College.—R.												3	2			58					
Eclectic Medical University.—E.				1									10			12					
Central Medical College.—R.					1						2	1	1		5	10					
Ensworth Medical College.—R.												1			7	9					
Barnes Medical College.—R.			10	1	1						4	78	19	7	10	14	11				
Marion-Sims Beaumont Coll. of Med.—R.			6	1	3			1			3	120	2	6	10	19	2	4			2
St. Louis Coll. of Phys. and Surgs.—R.			5		1					1		89	6	5	30	2	10				
American Medical College.—E.			8	1	1						1	4						1			
Homeo. Med. College of Missouri.—H.		1	2									8		2	3						
Dept. of Med. of the Univ. of Missouri			3		1							2		3	7	2	2			1	
Univ. of Nebraska College of Medicine.—R.															11						
John A. Creighton Med. College.—R.				1							1		1	1	34	6					
Lincoln Med. Coll. of Cotner University.—E.			2	2	1							3			2	6					
Dartmouth Medical College.—R.						2													3		24
Albany Medical College.—R.																					6

* Information not obtainable.

V 45
1905



NAME OF COLLEGE.	Alabama, 548.	Arizona, 9.	Arkansas, 465.	California, 435.	Colorado, 146.	Connecticut, 270	Delaware, 48.	Dist. Colum., 140	Florida, 123.	Georgia, 474.	Idaho, 37.	Illinois, 2,084.	Indian Ter., 218.	Indiana, 881.	Iowa, 916.	Kansas, 403.	Kentucky, 570.	Louisiana, 473.	Maine, 202.	Maryland, 476.	Mass., 1,018.
College of Physicians and Surgeons.—R.	4			4	2	14	1		3	2		23		2	1	1	1		20	1	18
Cornell University Medical College.—R.	2		1	2		11						23					1	1			6
Eclectic Medical College.—R.						1													1	3	
Long Island College Hospital.—R.					1	2															10
New York Homeo. Med. Coll. and Hosp.—H.				1		10	1	1													2
N. Y. Med. Coll. and Hosp. for Women.—H.						2															2
Univ. and Bellevue Hosp. Medical Coll.—R.	2			1		16			1	1				3		1			1		6
Syracuse Univ. Coll. of Med.—R.													1						1	2	2
University of Buffalo, Medical Dept.—R.														1							
Leonard Medical School.—R.	10		3					3	2	8								1			
Wake Forest School of Medicine.—R.																			1		
North Carolina Medical College.—R.									1												
Med. Department, University of N. Car.—R.																					1
Western Reserve University Med. Coll.—R.													1	1	1	2					
Cleveland Coll. of Physicians and Surgs.—R.												1			1		1				
Cleveland Homeopathic Med. College.—H.												1									
Eclectic Med. Institute.—R.			1		1				3	1		12	1	11	2	1	16				
Medical College of Ohio.—R.												5		8			16				
Pulte Medical College.—H.														1			2				
Miami Medical College.—R.	1													1		1	1			1	
Ohio Medical University.—R.														2			1		1		
Starling Medical College.—R.						1								1							
Toledo Medical College.—R.														1							
College of Medicine, Epworth University.—H.																					
School of Med. University of Oklahoma.—R.																					
University of Oregon, Medical Dept.—R.				2								1									
Medical Department, Willamette Univ.—R.																					
Temple Coll. of Phila., Dept. of Medicine.—R.									1												1
University of Pennsylvania, Dept. of Med.—R.	2		1	2	2	4	1	1	1			3		6	3	2	5		3	7	15
Hahnemann Med. Coll. and Hospital.—H.			1	1		3	1							1		1	1			2	2
Jefferson Medical College.—R.	1		2	3	1	11	1		2	3	3	5	1	9	7		4		4		27
Woman's Med. Coll. of Pennsylvania.—R.				1		1	2	2				2		1		2	1		2	2	6
Medico-Chirurgical Coll. of Philadelphia.—R.				1		3	1					1			1				1	2	9
Western Pennsylvania Medical College.—R.												4		7							
San Tomaso University, Manila.—R.																					
Med. Coll. of State of South Carolina.—R.									1	1											1
Tennessee Medical College.—R.																	6				
Knoxville Medical College.—R.	3		2	1				1	4	3		1	2	1			4	1			1
Medical Dept., University of Nashville.—R.	38		14	1					1	3		1	1	1			9	39			
Vanderbilt University Med. Department.—R.	15		5	4						7		1	1				13	6		1	
University of Tennessee, Medical Dept.—R.	10		6			1			1	1		3	2		1	1	9	2			
Meharry Medical College.—R.	20		24		1				24	20		2		1		3	15	9		1	
Memphis Hospital Medical College.—R.	23		70						1	2			19	2		1	1	85			
University of the South.—R.	8		4						1	15		2		1			1	13			2
Chattanooga Medical College.—R.	54		11	2	4	2	1		8	16	1	1	6		3	1	8	2			1
Univ. of West Tennessee, Med. Dept.—R.																					
Med. Dept., Ft. Worth University.—R.				6									44	1		1		5			
University of Texas, Dept. of Med.—R.					1													1			
Baylor University College of Medicine.—R.	1		2						1				10					2			
Physic-Medical Coll. of Texas.—Ph.M.	1		1										1								
Gate City Medical College.—R.			30						1			1	16	1			1	14			
Southwestern Univ. Medical College.—R.		1	1										2					2			
College of Physicians and Surgeons.—R.			3									1	5			1					
University of Vermont, Medical Dept.—R.							5												7		10
Medical College of Virginia.—R.									1												1
University College of Medicine.—R.	1			1				2	3											1	1
Univ. of Virginia, Dept. of Med.—R.	6		2			2	1	2	3	2			1		1	5	1		4		2
University of West Virginia.—R.						1															
Milwaukee Medical College.—R.						1															
Wisconsin Coll. of Phys. and Surgs.—R.						1															

* Information not obtainable.

progress in art, science and letters. (The examination to avoid exact dates and minor details.)

5. Latin Language. (a) Grammar; (b) four books of Cæsar, or its equivalent.

The colleges recognized as in good standing by this organization are: Hahnemann Medical College of the Pacific; Denver Homeopathic Medical College; Hahnemann Medical College, Chicago; Hering Medical College; Homeopathic Medical Department of the State University of Iowa; Southwestern Homeopathic College, Louisville, Ky.; Kansas City Hahnemann Medical College; Southern Homeopathic Medical College, Baltimore, Md.; Boston University School of Medicine; Homeopathic Medical College of University of Michigan; Detroit Homeopathic College; College of Homeopathic Medicine and Surgery of University of Minnesota; Homeopathic Medical College of Missouri; New York Homeopathic Medical College; New York Medical College for Women; Cleveland Homeopathic Medical College; Pulte Medical College, Cincinnati; Hahnemann Medical College of Philadelphia.

The Secretary is Dr. Chas. Gatchell, 100 State St., Chicago.

NATIONAL CONFEDERATION OF ECLECTIC MEDICAL COLLEGES.

The following are the present minimum requirements for admission to colleges members of this Association:

1. Good English education, to be attested by (a) first grade teacher's certificate; or (b) a diploma from a graded high school, or literary or scientific college or university; or (c) regents medical students certificate; or (d) entrance examination covering a good English education including an elementary knowledge of natural history, physics and Latin.

2. Graduates from pharmaceutical, dental and veterinary colleges may be allowed one year's time on a four-year medical course, only on condition that they comply with the entrance requirements, and pass all examinations and perform all laboratory work embraced in the course of study of the Freshman year. One year's advanced standing may be given students with degrees from a recognized literary college.

3. The course of instruction shall consist of a four-year graded course or its equivalent, as herein prescribed, including four sessions of six months each in four different calendar years.

The following colleges are members of this confederation:

American Medical College, St. Louis, Mo.; Bennett College of Eclectic Medicine and Surgery, Chicago, Ill.; California Medical College, San Francisco, Cal.; Eclectic Medical College of the City of New York, New York, N. Y.; Eclectic Medical Institute, Cincinnati, Ohio; Georgia College of Eclectic Medicine and Surgery, Atlanta, Ga.; Lincoln Medical College, Lincoln, Neb.; Kansas City Eclectic Medical University, Kansas City, Mo.

The secretary-treasurer is John K. Scudder, M.D., 1009 Plum St., Cincinnati, Ohio.

V 45
1905

Michigan, 646.	Minnesota, 427.	Mississippi, 357.	Missouri, 1,138.	Montana, 80.	Nebraska, 361.	New Hamp., 118.	New Jersey, 467.	New Mexico, 19.	New York, 2,423.	Nevada, 13.	N. Carolina, 445.	N. Dakota, 70.	Ohio, 1065.	Oklahoma, 117.	Oregon, 158.	Penn., 2,022.	Rh. Island, 108.	So. Carolina, 232	So. Dakota, 83.	Tennessee, 683.	Texas, 1,012.	Utah, 68.	Vermont, 137.	Virginia, 506.	Washington, 102.	West Va., 268.	Wisconsin, 530.	Wyoming, 13.	Canada, 183.	Foreign, 398.	P. Islands, 68.	Total, 24,147.
1	1					3	76		300	1	1		8			9	7	3		2	2		1	1	1		2		4	16		568
1					1	1	36		297				6			29	4				2		1	1					3	6		392
							2		94							1																99
							32		324				1			29	3			1	1			1					1	27		414
							18		72							2					1									1		110
							6		27																							34
3						3	47		266				6			7				1	3	4	3					5	11		391
									135							7									2				4		154
									219				1			6							1					2	4		231
		6	1				1		3		45					4		12			3			27		1			4		130
											18																					18
		1									14							2						2					1		31
									1		52							1						2							102
									2				61			3															72
1	1					1		1	1				65			5				1									4		84
		1	2				1		5				38			18															66
			1				1		6				43			16				1	2					16					135
1													85													3	1		4		121
													14													1					18
1													67													1					85
							1		2				142			6										2			1		156
												1	98			2										2					105
1													30		7					1											39
															8																7
																64															8
		1				1						1				49									25		2	4	1		192
																													1		50
							5		1							77								2							87
	4	1	1		1	5	37		21		4		18	1	2	346	2	1			6	2	1	4	4	7	1	3	9		546
			1				16		16				5			108							1	1								164
	2	2	1	1	1	2	44		16		16		22		5	418	6	1	2		4	2	3	4	2	8		3	4	11		676
2		3				2	13		7				2		1	70	2	2		1	3			1	1	1			2	13		151
1						1	38		12	1	2		2		1	369					1	2		2		1	1			5		461
									2				76			169										27						231
																															68	68
																			82													87
																			1	81				2								92
		4	1						3		4		1						3	3	2			3					1			47
		60							2		5								11	107	18			3		3			1			317
		15	4											1					3	63	18								1			158
		8	1						3		5								2	96	13			1					1			164
1		42	19				1		1		8		4	3		1			13	59	38			1		1			8			328
		157	2											1		1				67	44											476
		21					1				3		2	2		1			1	14	20			6		2						132
3		8						1	3		11		3	1	1		13	2	8	83	4	1		8	1	8			4			268
																				33												33
		1						1	1				17								114											191
																					106											148
		2											1								103			1					3			132
		3	1																		32											42
																					42											109
			3																		42											48
			1										1						3	55												72
			1		2		17	2	30							2	2						84		159		18		6	1		185
									23		12		2			2			5		2				148		19		1			209
	1							4	2		31					1			1										2	2		223
1	1	2			1		1		3		2		1			5			4		2		5		75		7	1		2		145
									1							4												30					36
9	1								2			1							2						1			153		1	3		174
	2																											72					74

States that Have no Medical School.—The following states and territories contain no medical college: Arizona, Delaware, Florida, Hawaii, Idaho, Indian Territory, Montana, Nevada, New Jersey, New Mexico, North Dakota, Porto Rico, Rhode Island, South Dakota, Utah, Washington, and Wyoming.

Philippine Islands.—Owing to the scarcity of physicians in the Philippine Islands, and also for the purpose of improving the present medical service, the Philippine Islands Medical Association, at its second annual meeting held in March, 1905, recommended the establishment of a modern school of medicine in Manila as a part of a general university.

Proposed Mergers.—It has been rumored that the Detroit College of Medicine will be merged with the University of Michigan with a view of teaching the last two years of the medical course at Detroit instead of at Ann Arbor.——Owing to the severity of the entrance requirements to medical colleges of Ohio, the number of matriculants fell off considably last year. This scarcity of pupils has brought about a revival of the talk of consolidating two and possibly three of the Cincinnati medical colleges into one big institution. Nothing positive has been done in the matter.

New College and Colleges Discontinued.—During the year only one new college has been formed, a most unusual occurrence. However, some changes of interest have taken place in the medical college world. The Kansas City Medical College, the Medico-Chirurgical College of Kansas City, Mo., and the College of Physicians and Surgeons of Kansas City, Kan., have been absorbed by the University of Kansas, and hereafter this institution will teach the four years of medicine. The first two years of the course will be given at Lawrence, the last two at Kansas City, Kan., Kansas City, Mo., and Rosedale, Kan., where a new hospital has been erected by authority of the state.——In St. Joseph, Mo., the Ensworth Medical College and the Central Medical College have combined, assuming the name of Ensworth-Central Medical College.——Dallas Medical College, Dallas, Texas, has been merged with the Medical Department of Baylor University of the same city.——Bell Medical College, Dallas, Tex., has changed its name to College of Physicians and Surgeons.——The Columbian University, Washington, D. C., is now known as the George Washington University.—The new college formed during the year is the Eclectic Medical Institute of Dallas, Texas. The Epworth University, Oklahoma City, Okla., which last year gave instruction in the first year of the medical course, now proposes to teach the full four years.——The Fordham College Medical Department, which was instituted last year, will open its first session in October, 1905.——The Medical Department of the University of Porto Rico has not yet been organized.——Harvey Medical College, Chicago, has ceased to exist.——Lombard College, Galesburg, Ills., has discontinued teaching the first year of the medical course.

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Bronchial Asthma.

In considering the treatment of bronchial asthma *The Practitioner*, London, calls attention to the importance of distinguishing it from the other forms of asthma, such as cardiac asthma, renal asthma, hay asthma, thymic asthma or laryngismus stridulus due to enlargement of the thymus gland.

Bronchial asthma or spasmodic asthma is the condition in which there is a marked neurotic element and is caused by a sudden contraction of the unstriped muscular fibers in the walls of the bronchioles, which are innervated by the pneumogastric nerve. The spasms usually occur at night, accompanied by wheezing through the day.

The treatment, as described by the *Practitioner*, is arranged under two heads:

1. That to be resorted to during the attack.
2. That to be adopted during the intervals to prevent their recurrence if possible.

During the attack a little chloroform should be inhaled to produce rapid relaxation of the bronchial muscles. Cigarettes of stramonium leaves may be of service. A powder consisting of pulverized belladonna, stramonium and hyoscyamus leaves with some potassium nitrate burnt and the fumes inhaled will often bring relief. An inhalation of from three to five minims (.20-.30) of the nitrite of amyl from a crushed capsule frequently relieves the paroxysm. Between the attacks the following combinations, containing potassium iodid, is recommended:

℞. Potass. iodidi	gr. x	65
Tinct. lobeliæ	ʒss	2
Vini ipecacuanhæ	m. xii	75
Aquæ chloroformi q. s. ad	ʒi	30

M. Ft. mistura. Sig.: Two tablespoonfuls three times a day after food. Or:

℞. Potassii iodidi	gr. xii	75
Ext. stramonii	gr. 1-6	01
Spts. chloroformi	m. xx	1 30
Spts. ammon. arom.	m. xx	1 30
Aquæ q. s. ad	ʒss	15

M. Sig.: To be taken at one dose on retiring at night.

[Hypodermic injections of morphin with cocain, or morphin grain 1-3 (0.2) and atropin grain 1/100 (.066) are also recommended, but it is not advisable to use these drugs in this condition unless in extreme and aggravated cases after all other remedies have been tried.]

Two other considerations are of importance in the treatment of bronchial asthma. 1. The place of abode must suit the patient. High, dry altitudes are preferable in some cases, in others, the seaside, country, or city may best suit the individual. 2. The diet must be carefully looked after and regulated. Heavy meals should not be taken in the evening, as dyspepsia is often the starting point of an attack. Whisky and a few minims of the spirits of chloroform often relax the bronchioles and check an oncoming attack.

Other combinations containing lobelia are recommended by some authors as follows:

℞. Tinct. lobeliæ ether	ʒii	8
Aquæ minth. pip.	ʒiv	120

M. Sig.: One tablespoonful every half hour until relieved. Or:

℞. Tinct. lobeliæ	ʒi	4
Tinct. belladonnæ	ʒi	4
Tinct. aconiti	m. xx	1 30
Aquæ cinnamomi q. s. ad	ʒiii	90

M. Sig.: One tablespoonful every three or four hours until relieved.

Between the attacks the following may be given:

℞. Potass. iodidi	ʒiiss	10
Potass. bicarb.	ʒv	20
Tinct. bellad.	ʒiii	12
Infus. gent. co. q. s. ad	ʒiv	120

M. Sig.: One teaspoonful in water three times a day, after food.

Stramonium may be administered during or at the beginning of an attack, combined as follows:

℞. Tinct. stramonii	ʒiv	15
Tinct. aconiti	ʒii	8
Potass. bromidi	ʒi	30
Aquæ chloroformi q. s. ad	ʒiii	90

M. Sig.: One teaspoonful in water at the beginning of the attack. Or:

℞. Ext. stramonii	gr. vi	40
Pulv. opii	gr. iv	25
Camphoræ	gr. xx	1 30
Mft. cap.	no. xii	

Sig.: One capsule three times a day.

High Arterial Blood Pressure.

H. D. Rolleston, in an article in the *Clinical Journal* (London), enumerates in a general way the following most important causes of high arterial tension:

1. Poison taken into the body, such as lead.
2. Autointoxication.
3. Imperfect elimination by the kidneys, skin or blood.
4. Nervous influences, such as worry and strenuous living.
5. Excessive influence of the adrenal glands.

The results of this continued high arterial pressure are hypertrophy of the left ventricle, atheroma, endarteritis and granular kidney.

The symptoms arising from such conditions are numerous, including mental weakness, senility, syncopal attacks, dilated heart, angina pectoris, granular kidney, pleural effusions, diabetes, loss of weight and neurasthenic conditions.

In the treatment of this important pathologic condition the cause in each case must be considered. The general conditions of life should be made simple and healthy. Food must be taken in moderation. Without becoming vegetarian, the author recommends less proteid and relatively more carbohydrate. Mastication should be thorough. Extreme moderation in the use of alcohol or total abstinence should be insured. Exercise, but not to excess, is very important in preventing high tension. The exercise should be taken regularly and in the open air. Passive exercise, or massage to the muscles of the limbs, lowers blood pressure and is of benefit in this condition. Superficial massage raises arterial tension. Elimination by the skin must be kept up and if necessary Turkish baths may be taken to dilate the peripheral vessels and thus lower the blood pressure. The reduction of blood pressure by medicinal means is a difficult task, according to this author. The number of drugs which will do this effectively is small and at the same time a too sudden reduction of blood pressure may produce harmful results.

The author calls attention to the danger of producing an irregular pulse and cardiac failure, as in one case, by the reduction of arterial pressure from 220 to 110 mm. of mercury, by administration of the tincture of aconite in five minim (.30) doses. Of the vasodilators, nitrite of amyl has only transient action, the nitrite of soda having a more persistent effect. In this connection, he states that it is highly probable that insufficient doses of these preparations are given and disappointment in the results follow.

The official dose of sodium nitrite is from one to two grains (.06-.12), but he quotes the use of this preparation in doses ranging from one and a half (.90) to five grains (.30) often repeated.

Spiritus Glycerylis Nitratis (U. S. P., Eighth Dec. Rev.) (1 per cent.) should be given in doses ranging up to ten minims (.65). The iodids are commonly employed to bring down the arterial tension, but in ordinary doses the author does not believe they have much effect unless by possibly stimulating the thyroid gland to increased secretion, and in that way reducing arterial tension.

Loomis recommends chloral hydrate in five grain doses (.30) as of more benefit than spirits of glyceryl trinitrate. Salines and small doses of mercurials are of value in preventing intestinal fermentation, the products of which, when absorbed, tend to constrict the blood vessels and to increase the arterial tension.

In Bright's disease, accompanied by high arterial tension, the following combination is of value:

V 45
1905

℞. Nitroglycerini	gr.	1/4	015
Tinct. strophanthi	℥ii	8	
Tinct. belladonnæ	℥i	4	
Elix. simplicis q. s. ad	℥iii	90	

M. Sig.: One teaspoonful from every four to six hours until the effects on the pulse are shown.

N. S. Davis, in the *Sys. of Phys. Therapeutics*, recommends, when the arteries are sclerosed, that milk should form a considerable element of the diet, vegetables, breads, cereals, fruits and eggs moderately, fish, oysters and the white meat of fowls may be used.

The red meats, such as beef and mutton are the chief sources of alimentary toxins and should be eaten daily and should be entirely excluded from the diet if headache, insomnia, nocturnal distress, sighing respiration or dyspnea suggests autointoxication. When such symptoms arise, a milk diet should be prescribed for a few days or otherwise modified by the addition of cereals, bread and a small quantity of vegetables and fruits.

The necessity of eating sparingly rather than heartily is greater in proportion as the lesions of the arteries become more pronounced.

At all times pork and 'high' game, meat stews, rich gravies, greasy soup, preserved meat, crabs, and lobsters must be avoided.

Medicolegal

Liability for Performance of Unauthorized Operation.—The Supreme Court of Minnesota says that the question raised in the case of Mohr vs. Williams as to whether the consent of a patient is necessary to the performance of an operation is new in that state. At least, no case was called to the court's attention wherein it has been discussed or decided, and very few cases were cited from other courts. Continuing, it says that it has given the matter very deliberate consideration, and is unable to concur with counsel for the defendant in their contention that the consent of the plaintiff was unnecessary in this case. It can not be doubted that ordinarily the patient must be consulted, and his consent given, before a physician may operate on him. 1, Kinkead on Torts, section 375, states the general rule on this subject as follows: "The patient must be the final arbiter as to whether he will take his chances with the operation, or take his chances of living without it. Such is the natural right of the individual, which the law recognizes as a legal one. Consent, therefore, of an individual, must be either expressly or impliedly given before a surgeon may have the right to operate." There is logic in the principle thus stated, for, in all other trades, professions or occupations, contracts are entered into by the mutual agreement of the interested parties, and are required to be performed in accordance with their letter and spirit. No reason occurs to the court why the same rule should not apply between physician and patient. If the physician advises his patient to submit to a particular operation, and the patient weighs the dangers and risks incident to its performance, and finally consents, he thereby, in effect, enters into a contract authorizing his physician to operate to the extent of the consent given, but no further.

It was not, however, contended by the defendant that under ordinary circumstances consent is unnecessary, but that, under the particular circumstances of this case, consent was implied; that it was an emergency case, such as to authorize the operation without express consent or permission. The defendant was a physician and surgeon of standing and character, making disorders of the ear a specialty and having an extensive practice. He was consulted by the plaintiff, who complained to him of trouble with her right ear, and, at her request, made an examination of that organ for the purpose of ascertaining its condition. He also at the same time examined her left ear, but, owing to foreign substances therein, was unable to make a full and complete diagnosis at that time. The examination of her right ear disclosed a large perforation in the lower portion of the drum membrane, and a large polyp in the middle ear, which indicated that some of the small bones of the middle ear (ossicles) were probably diseased. He informed the plaintiff of the result of his examination, and advised an operation for the purpose of removing the polyp and diseased ossicles. After consultation with her family physician, and one or two other consultations with the defendant, the plaintiff decided to submit to the proposed operation. She was not informed that her left ear was in any way diseased, and understood that the necessity for an operation applied to her right ear only. She repaired to the hospital, and was placed under the influence of anesthetics; and, after being made unconscious, the defendant made a thorough examination of her left ear, and found it in a more serious condition than her right one. A small perforation was discovered high up in the drum membrane, hooded, and with granulated edges, and the bone of the inner wall of the middle ear was diseased and dead. He called this discovery to the attention of the plaintiff's family physician, who attended the operation at her request, who also examined the ear and confirmed the defendant in his diagnosis. The defendant also further examined the right ear, and found its condition less serious than expected, and finally concluded that the left, instead of the right, should be operated on, devoting to the right ear other treatment. He then performed the operation of ossiculectomy on the left ear, removing a portion of the drum membrane and scraping away the diseased portion of the inner wall of the ear. The operation was in every way successful and skillfully performed. But the plaintiff claimed that the operation greatly impaired her hearing, seriously injured her person, and, not having been consented to by her, was wrongful and unlawful, constituting an assault and battery. She obtained a verdict for $14,322.50 damages, but a new trial was granted on the ground that this was excessive.

The Supreme Court affirms the order granting a new trial, but holds that the defendant had no authority to perform the operation without the plaintiff's consent, express or implied. That her consent was not expressly given, and whether it should be implied from the circumstances of the case was a question for the jury to determine. That, if the operation was not authorized by the express or implied consent of the plaintiff, it was wrongful and unlawful and constituted in law an assault and battery. It is unnecessary to show in a civil action for assault and battery that the defendant intended by the act complained of to injure the plaintiff. It is sufficient if it appear that the act was unlawful.

The medical profession, the Supreme Court says, has made signal progress in solving the problems of health and disease, and they may justly point with pride to the advancements made in supplementing Nature and correcting deformities and relieving pain and suffering. The physician impliedly contracts that he possesses, and will exercise in the treatment of patients, skill and learning, and that he will exercise reasonable care and exert his best judgment to bring about favorable results. The methods of treatment are committed almost exclusively to his judgment, but the court is aware of no rule or principle of law which would extend to him free license respecting surgical operations. Reasonable latitude must, however, be allowed the physician in a particular case; and the court would not lay down any rule which would unreasonably interfere with the exercise of his discretion, or prevent him from taking such measures as his judgment dictated for the welfare of the patient in a case of emergency. If a person should be injured to the extent of rendering him unconscious, and his injuries were of such a nature as to require prompt surgical attention, a physician called to attend him would be justified in applying such medical or surgical treatment as might be necessary for the preservation of his life or limb, and consent on the part of the injured person would be implied. And, again, if, in the course of an operation to which the patient consented, the physician should discover conditions not anticipated before the operation was commenced, and which, if not removed, would endanger the life or health of the patient, he would, though no express consent was obtained or given, be justified in extending the operation to remove and overcome them.

But such was not the case at bar. The diseased condition of the plaintiff's left ear was not discovered in the course of an operation on the right, which was authorized, but, on an independent examination of that organ, made after the author-

ized operation was found unnecessary. Nor was the evidence such as to justify the court in holding, as a matter of law, that it was such an affection as would result immediately in the serious injury of the plaintiff, or such an emergency as to justify proceeding without her consent. She had experienced no particular difficulty with that ear, and the questions as to when its diseased condition would become alarming or fatal, and whether there was an immediate necessity for an operation were, under the evidence, questions of fact for the jury. The evidence also made the question of whether, if the family physician by his conduct assented to the operation, the plaintiff was bound thereby, one of fact for the jury to determine.

The amount of the plaintiff's recovery, if she was entitled to recover at all, must depend on the character and extent of the injury inflicted on her, in determining which the nature of the malady intended to be healed and the beneficial nature of the operation should be taken into consideration, as well as the good faith of the defendant.

Current Medical Literature

American Medicine, Philadelphia.
August 5.

1 Normal Malay and the Criminal Responsibility of Insane Malays. C. E. Woodruff, New York.
2 *Why Surgical Fixation of a Movable Kidney Will Not Relieve Dyspeptic and Nervous Symptoms. C. D. Aaron, Detroit, Mich.
3 *Management of Transmissible Diseases. D. H. Bergey, Philadelphia.
4 *Hypnotic Cumulative Action as a Therapeutic Guide. G. F. Butler, Chicago.
5 Systematic Examination of the Eyes of Defectives. F. P. Lewis, Buffalo, N. Y.
6 *Arteriosclerosis. G. Stockton, Columbus, Ohio.
7 *The Busy Practitioner from a Business Point of View. A. J. Colton, Buffalo, N. Y.

2. Why Surgical Fixation of a Movable Kidney Will Not Relieve Dyspeptic and Nervous Symptoms.—Aaron says that the study of several hundred cases in his own practice has led him to the belief that movable kidney in itself can not produce all the dyspeptic and nervous symptoms of which patients complain, unless there is a displacement of some other organ in the abdomen. Cases in which the kidney alone is movable are those that give few or no symptoms. The author's results in over 600 cases, with a properly fitting band, have proved eminently satisfactory. Before fitting a band to patients with movable kidney, the location of all the abdominal organs must be accurately made out by palpation, auscultatory percussion, transillumination, inflation, *x*-ray, etc. A movable kidney is only pathologic when it is palpable. The irrationality of producing a pathologic condition by fixing a kidney that ought to be mobile, therefore, can readily be seen. When a patient is in the dorsal decubitus position, gravity carries the kidney back to its normal position. This can not take place when a kidney is surgically fixed, and under these circumstances there is always an abnormal condition. In cases of movable kidney, surgeons irrationally endeavor to bring about an abnormal adhesion, and in this way induce a condition that may aggravate the symptoms they are endeavoring to relieve.

3. Management of Transmissible Diseases.—Bergey says that the general prevalence of some of the transmissible diseases may be attributed to two important causes: (1) The infection of large numbers of individuals through mild and often unrecognized cases; and (2) the failure to enforce the sanitary precautions that would prevent the dissemination of infectious materials. The difficulty experienced in the satisfactory isolation of cases of transmissible disease in private houses calls for the more general treatment of these diseases in proper isolation hospitals. There are at least four important sources of danger from such hospitals, yet with proper equipment and management all these dangers may be eliminated. They are (1) the danger of the dissemination of infectious materials through the drainage; (2) the danger of the dissemination of infectious materials by means of air currents; (3) the danger of the dissemination of infectious materials by insects or vermin; (4) the danger of the dissemination of infectious materials by the physicians, nurses, attendants, visitors, or the convalescents.

4. Hypnotic Cumulative Action as a Therapeutic Guide.—Butler discusses the principle of aggravation of symptoms from the standpoint of therapeutic indication, so far as hypnotics are concerned. The cumulative effects of the hypnotics, as shown by their extreme effect hours after their first administration, indicate that this can be secured by broken doses given at intervals, so as to secure the acme of influence during the hours after 12, midnight, when this influence is most needed. The various alterative effects of the hypnotics serve as an indication that they will counteract the effects occasioned by the products of altered metabolism which are irritating the monarchical vasomotor center of the medulla. The synthetics, which are more potent in these particulars, can be aided, and their injurious effects removed by the addition of vegetable hypnotics, like conium, and those derived from the solanaces, as well as certain opium derivatives.

6. Arteriosclerosis.—Stockton states that heredity, together with syphilis, alcohol, gout, etc., are, in his opinion, the most prominent etiologic factors. He discusses the pathologic changes in the blood vessels and calls attention to the symptoms in the various forms of the disease, particularly the cardiac form. He directs attention to renal sclerosis, and regards chronic interstitial nephritis as an important cause of the cardiac form of the disease and also of sclerosis of the encephalon. The importance of recognizing the disease in the early stages is emphasized and treatment is fully discussed.

7. The Busy Practitioner from a Business Point of View.—Colton has devised a card index system, whereby a physician can keep his own books as easily as he can keep the ordinary visiting list.

Medical Record, New York.
August 5.

8 *Syphilitic Spinal Paralysis, with Special Reference to the Type Described by Erb. W. J. Dougherty, New York.
9 *Copper and Zinc Poisoning—Brass Poisoning. M. H. Sicard, New York.
10 *Rheumatism of the Feet. L. W. Ely, New York.
11 *Gases of the Body. L. H. Watson, Chicago.
12 *Importance of Early Recognition of Valvular Disease in Children. A. E. Childs, New York.
13 *Fibroma of the Ileum, Producing Obstruction by Invagination; Enterotomy; Recovery. H. A. Royster, Raleigh, N. C.

8. Syphilitic Spinal Paralysis.—According to Dougherty, the time that has elapsed between the primary infection and the onset of symptoms indicating medullary involvement must be taken into consideration, and those cases developing within a few years after the luetic infection, even though slow in onset may be looked on as an expression of secondary or tertiary syphilis, whereas, if a considerable period of time has elapsed before the beginning of the symptoms referable to the cord, the changes must be due to what he calls the terminal syphilitic stage. He describes the histories and pathologic findings in two cases of the former class, which lead him to conclude that it is the distribution and dissemination of the vascular lesion rather than any special difference in their nature which determines which type of spinal syphilis shall ensue, and that the so-called Erb's syphilitic spinal paralysis is not, as Erb is inclined to believe, necessarily dependent on a system disease of the spinal cord.

9. Copper, Zinc and Brass Poisoning.—Sicard describes the technical processes employed in the production of copper, zinc, and brass, and the toxic effects to which the workmen engaged in them are subject.

10. Rheumatism of Feet.—Ely says that among the patients seeking relief at an orthopedic clinic probably the most frequent complaint is "rheumatism of the feet." There is no "rheumatism of the feet." One of the commonest affections giving rise to pain in the feet is flat foot. Another is anterior metatarsalgia, or Morton's toe. Gonorrheal arthritis or periarthritis of the ankle has often been observed, and the author says that there is a form of gonorrheal infection characterized by extreme sensitiveness about the sole, to which he gives the name of gonorrheal foot. The pathology of this affection is still a matter of doubt. Hysteria may simulate rheumatism of the feet, and tuberculosis of the ankle and tarsus must also be carefully excluded, as any circumscribed, persistent, painful swelling in the foot, especially of a child, is to be viewed with extreme suspicion. The sequelæ of fractures, and the pains of late syphilis or of locomotor ataxia must also be kept in mind.

V 45
1905

Gout and acute rheumatism itself close the list of such affections, and it is pointed out that acute articular rheumatism never leaves behind it a damaged joint. The treatment of these conditions is briefly outlined, the chief adjuvants required being zinc oxid plaster, plaster of Paris, a few drugs, and some assistance from the bracemaker and shoemaker.

11. **Gases of Body.**—Watson says that some of the gases, like oxygen, nitrogen, and carbon dioxid, are essential to our existence, but others are waste products, and appendicitis, intestinal obstruction, ovarian disease and heart troubles may be simulated by their presence in the intestinal tract. Nitrogen, oxygen, carbon dioxid, sulphureted and carbureted hydrogen, and marsh gas are the principal gases of the body. Carbon dioxid is the greatest in volume and the most widely diffused. It has usually been designated as a poisonous gas, but modern physiologic chemistry takes a different view of it, and it can be considered poisonous only when it is an obstruction of respiration. Large amounts may be found in the stomach and bowels in health, and still more in neurotic conditions, but its coefficient of absorption is high and but little inconvenience results. The accumulation of gas in the bowels may give rise to diagnostic difficulties, and the author cites several such cases. Lactic, acetic, and butyric acid fermentation, and the decomposition of fats, proteid matter and cellulose are all concerned in the formation of intestinal gases. When loops of gut are strangulated, first water and later gas forms in them, giving rise to meteorism. Phantom tumors are of this order. Headache, vertigo, and nausea are often the result of the presence of sulphureted hydrogen in the bowel. The formation of intestinal gases must be controlled by proper management of the diet.

12. **Importance of Early Recognition of Valvular Disease in Children.**—Childs speaks principally of valvular disease of rheumatic origin. He defines rheumatic endocarditis by saying that it is an inflammation of the lining membrane of the heart commonly confined to the valves, manifested by stiffness or pain in the joints or tendon sheaths, or in any of the muscles of the body, from the most trivial or obscure form to a well-marked arthritis. It is usually accompanied by rapid heart action without regard to intermittency or irregularity, a low grade of fever, ofttimes but a half degree, a soft blowing, usually systolic murmur at the apex of the heart, and by a well-marked leucocytosis. He calls attention to the necessity for careful physical examination of children, emphasizing the fact that endocarditis in children is very often overlooked in its early stages because the manifestations of rheumatism in children are usually very obscure. They may appear only as the so-called wandering or growing pains, or there may be only stiffness, or definite joint pains alone, or joint pains plus swelling and redness. Any muscular pain, no matter how slight or where located, may mean an associated endocarditis. In the treatment especial attention must be paid to the heart muscle by rest and general systematic treatment to prevent anemia and malnutrition.

13. **Fibroma of Ileum, Producing Obstruction by Invagination.**—Royster gives the history of a man of 42 who for about six months had suffered from symptoms pointing to a progressive growth of the intestine. Finally there came an attack of obstruction, which on opening the abdomen was found to be caused by an invagination of the ileum secondary to the presence in the gut of a pedunculated fibroma, the size of a walnut. This was removed through a longitudinal incision by excising the ellipse of mucous membrane surrounding its base, and the intestinal wound closed with three rows of continuous sutures of silk, one for each coat and an extra interrupted Lembert stitch on the peritoneal coat. The patient made a good recovery.

Medical News, New York.

August 5.

14 Beginnings of the Psychoses. W. K. Walker, Dixmont, Pa.
15 *Galvanism as a Curative Agent in Nervous Diseases: Importance of Equipment and Technic. W. B. Pritchard, New York.
16 *Appendicitis: Medical and Surgical. R. R. Kime, Atlanta, Ga.
17 Attempt to Adapt for Clinical Purposes, Tests for Electric Conductivity of Urine. G. Kollecher and L. B. Schmidt, Chicago.
18 *Stricture of the Urethra: Preliminary Note on a Tunneled and Grooved Sound and a Tunneled and Grooved Catheter for Dilatation. V. C. Pedersen, New York.
19 Cystic Kidney and Liver. H. A. Reque, Chicago.

15. **Galvanism in Neurology.**—Pritchard is convinced of the efficacy of galvanism in neurology, though it is by no means indiscriminately applicable. On the contrary, its field is relatively limited, and it has no place as yet in the numerical majority of neurologic cases, or, if a place at all, only as an aid in some collateral way to the end desired. In the field of peripheral nerve diseases, including many of the neuroses, nearly all forms of neuritis, the tics, vasomotor and trophic affections, and the paresthesiæ of whatever cause, galvanism occupies a position of positive and indispensable importance. The fatigue psychoses, the headaches and cerebral conditions underlying the obsessions of neurasthenia, and of simple affective melancholia, are really the field of selective usefulness for this agent. Even in this field of selection, however, galvanism is rarely, if ever, a specific. To get the best results, it is necessary to have a proper equipment and to know how to use it.

16. **Appendicitis.**—Kime says that the average surgeon will save more lives by operating only in the severe cases of appendicitis within the first forty-eight hours and in those in which the patients suddenly grow worse after a few days of improvement; doing the interval operation on all patients who do not completely recover from first attack and in relapsing cases. Internal treatment properly conducted should have a death rate of not over from 2 to 5 per cent. The death rate can be reduced nearest to zero by the average surgeon doing the interval operation on those patients who do not fully recover or who have relapses, and operating in the severe cases within from twenty-four to forty-eight hours and in those that suddenly grow worse after a few days of improvement, leaving the remainder of the cases to judicious medical treatment. There is also a field for medical treatment in many cases after the appendix has been removed in correcting the original cause of appendicitis or looking after existing complications. The surgeon should not dogmatically assert that appendicitis has no medical treatment, nor decry or exclude judicious medical treatment in these cases; neither should the general practitioner exclude the surgeon, but each should assist the other.

18. **Stricture of Urethra.**—Pedersen calls attention to a tunnelled and grooved sound and catheter devised by him. The curve of the sound is of the same radius as the standard urethral sound, but one inch shorter. This decrease in length has been compensated for by an increase of one inch in the length of the shank. The object and advantage of the short curve lie in the fact that there is very much less leverage on the face of a stricture in a short curve than in a long curve, thus the danger of injuring the filiform and of making false passages in the urethra is greatly decreased. The taper of the curve is uniform from its base to its tip and regularly includes six sizes from No. 12 F. upward. The smallest point of the instrument is made 6 F. for the reason that this is the size of the Maisonneuve instrument. The small sizes, therefore, below 12 F. are uniformly at the tip No. 6 F. and regularly taper upward as follows: Two sizes for 8 F., three sizes for 9 F., four sizes for 10 F. and five sizes for 11 F. The uniformity of the taper has the object of rendering the dilatation much more secure on the following grounds: The middle of the curve of the 21 F. sound, for example, is 18 F., while the sizes 19 and 20 F. occur at equal distances between the middle of the curve and the full size of the shank. If, therefore, a No. 20 F. sound has already been passed through the stricture, the beak of a 21 F. sound will be almost entirely through the same stricture before the dilating begins. The safety of this plan is obvious and becomes much more important when, for any reason, the dilating is being done more rapidly than one size at a time. The tunnel of the sound is one-third larger in diameter than the diameter of a small filiform and is five-eighths of an inch long. These dimensions are uniform throughout the set of sounds, thus securing entire uniformity of action and correcting the mistake in the standard tunneled sound by which the tunnels in the upper sizes are so large as to permit an inconvenient amount of play over the filiform. The length of

the tunnel secures the sounds from twisting, buckling, breaking or cutting the filiforms, accidents which are not infrequent in the standard instrument. The length, however, is not sufficient to cause binding of the sound on the filiform, provided ordinary skill is employed. The groove of the sound passes along the shank three-quarters of the length thereof, thus insuring ease of testing the freedom of the filiform. The grooves, like the tunnels, are also of the same size and length throughout the set. There is no reason whatever for increasing the width and depth thereof as the size of the sounds advances, thus the inconvenient dipping of the mucous membrane into a wide groove in a large sound is largely corrected and consequent pain to the patient avoided. The tunneled and grooved silver catheter alluded to in the title are designed in the same manner, namely: With a short curve of uniform taper of six sizes, a shank one inch longer than the standard, tunnels of uniform diameter, five-eighths of an inch long, and grooves of uniform length, depth and width throughout the series. The set which the author has employed consists of a 6 F., 12 F. and 18 F., tunneled and grooved catheter and sounds of all numbers from 8 to 20 F., both inclusive, also 22 and 24 F. The ordinary practitioner can do perfectly good work with catheters 6 and 12 F. and the even numbered sounds from 8 to 20 F., both inclusive. Only the specialist who is certain to encounter difficult cases frequently needs every size of sound. The technic of employing these instruments is as follows: After the filiform has been inserted in the usual manner, the 6 F. catheter is passed over the filiform, the bladder, if distended, is partially evacuated through the silver catheter or, if empty, is moderately filled with any mild antiseptic solution, such as boric acid, permanganate of potash, Thiersch or silver nitrate solution. The catheter is then removed, leaving the filiform *in situ*, and the sounds are taken in order, beginning with 8 F., and gently passed over the filiform through the stricture until that size is reached which the patient states to be moderately painful. Pedersen finds that, as a rule, most strictures may be thus dilated to about 10 F. with very little inconvenience to the patient. The sound is then left *in situ* for ten or fifteen minutes in order to get the full benefit of the dilatation. After this the filiform and sound are removed and the patient is allowed to evacuate the contents of his bladder. If the contents of the bladder be urine, as in cases of distention, the sound is removed and the filiform is left in place, and the silver catheter is then again passed and the bladder carefully washed with rather hot antiseptic fluid, some of which is left in the bladder to prevent bleeding, such as sometimes occurs when an overdistended bladder is emptied. After four or five days the patient returns for the passing of larger sounds. Usually in from four to six weeks dilatation is carried to the point where a filiform becomes unnecessary. A very few strictures are so tortuous and deeply seated that tunneled and grooved sounds 22 and 24 F. should be passed over a filiform before use of the latter is abandoned.

New York Medical Journal.

August 5.

20 Recent Advances in Surgery. H. Lilienthal, New York.
21 *Recurrent Tuberculous Peritonitis After Incomplete Operation, with Report of Case Treated by X-Rays. J. B. Shober, Philadelphia.
22 *Treatment of Pott's Disease, and of Rotary Lateral Curvature, by the Plaster-of-Paris Jacket and the Aluminum Corset. C. Ogilvy, New York.
23 *Management of Summer Diarrhea in Infants and Young Children. Observations Based on 5,000 Cases in Private and Dispensary Practice. E. M. Sill, New York.
24 The Premature Infant. D. R. Sherman, Buffalo, N. Y.
25 Case of Foreign Body in the Rectum. C. S. White, Washington, D. C.
26 Significance of Sudden, Severe, Abdominal Pain. E. A. Babler, St. Louis.
27 Suggestions in Treatment of Wounds. H. D. Collins, New York.

21. **Tuberculous Peritonitis.**—As the result of personal experience and a study of the literature, Shober concludes that until we have more precise methods of differentiation most patients with tuberculous peritonitis will be operated on under some other diagnosis. Celiotomy and removal of the primary focus of the disease offers the best prospect of cure. The abdomen should be thoroughly irrigated and closed without drainage. A short course of *x*-ray treatment immediately following operation is advisable in all cases, but it is especially important in those cases in which the primary focus has not been removed. Should recurrence take place in these cases, a secondary operation—to remove, if possible, the primary focus—is advisable; and this operation should be followed by a course of *x*-ray treatment.

22. **Aluminum Corset in Pott's Disease.**—Ogilvy favors the aluminum corset, made from sheet aluminum of various thicknesses. To make an aluminum corset, a plaster of Paris cast of the body is taken. This is made exactly as is a plaster of Paris corset, except that the trimming of the upper and lower edges is omitted. Around this, after it has been removed from the body, an additional bandage is tightly wound, from top to bottom, drawing it closely together. This is then filled in with soft setting plaster of Paris. The outer cast of bandages is then removed and the model obtained over which the aluminum is molded. The hammering of the aluminum, in working it up to fit the model, so tempers it as to make it almost as durable as steel. It is made in two halves, which are swung from behind on two double-hinged joints. It is then perforated and polished. This makes not only a light, durable, comfortable and firm support, but also one which can be easily remodeled from time to time as occasion requires, and for this reason particularly is it of the greatest usefulness in spinal curvature, for it allows us to keep up a firm, even, constant pressure against the deformity without pain or discomfort. Before the cast for a corset is made, the rigidity and spasm of muscle, if present, should be as much as possible relieved to obtain a better correction of the deformity. This may be accomplished by manipulation and extension, which should be employed for several weeks, if necessary, previous to the application of the corset. The results obtained by the use of the aluminum corset with corrective exercises are these: Not only are the general development, health and muscle tone much improved, but the deformity is arrested, and to some extent—in some cases to a very great extent—corrected.

23. **Management of Summer Diarrheas in Children.**—Sill summarizes his views as follows: First, absolute rest for the inflamed mucous membrane of the stomach and intestines, attained by stopping all food and giving nothing but water; second, eliminate the cause—namely, a foreign substance which is causing irritation, as fermenting or indigestible food, this being done by the use of castor oil or calomel; third, success lies in the mode of gradually increasing the strength and quality of milk, beginning in all cases irrespective of the age up to a year with a very weak cream mixture.

Boston Medical and Surgical Journal.

August 3.

28 *Influence which the Acquisition of Tropical Territory by the United States Has Had, and is Likely to Have, on American Medicine. G. Biumer, San Francisco.
29 Case Illustrating the Local Conditions After a Suprapubic Enucleation of the Prostate. A. L. Chute, Boston.
30 Observations on the Treatment of Epilepsy. D. R. Brower, Chicago.
31 Dietary in Epilepsy. L. P. Clark, New York.
32 Photography of Gross Specimens. M. D. Miller, Cambridge.

28.—See THE JOURNAL, July 15, 1905, page 169.

Lancet-Clinic, Cincinnati, Ohio.

August 5.

33 Conservative Treatment of Pelvic Diseases in Women. H. F. Lewis, Chicago.
34 *Strictures of the Male Urethra. A. Ravogli, Cincinnati.

St. Louis Medical Review.

July 29.

35 Antitetanic Serum in Gunshot Wounds. H. J. Scherck, St. Louis.
36 Curiosities of Ancient Japanese Medicine. J. Knott, Dublin, Ireland.

August 5.

37 Law of Consent in Regard to Operations. A. N. Taylor, New York.

34.—See abstract in THE JOURNAL, Nov. 5, 1904, page 1409.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

July 22.

1 Relation of Medical Men to Official and Public Bodies. R. Maclaren.
2 *The Opsonic Power of People Suffering from Tuberculosis. R. H. Urwick.

3 Incidence of the Hair's Greyness. G. L. Cheatle.
4 *Perception of Light and Color. F. W. Edridge-Green.
5 Royal College of Surgeons of Edinburgh; Its Early Connection with Medical Teaching. R. Mc. Johnston.
6 Report of Special Chloroform Committee.

2. Opsonic Power of the Tuberculous.—Urwick studied the opsonic power of the blood of 54 people suffering from various tuberculous affections, employing the method described by Wright, and found that this power may be either high or low. A low power is due to an inherent deficiency or to an exhaustion of the machinery of immunization. A high power is due to an active response by the machinery of immunization to the stimulus of infection. This power in the tuberculous varies from day to day, and the curve thus produced shows in many cases negative and positive phases following autoinoculation. The opsonic power of healthy people is nearly the same and does not vary from day to day.

4. Perception of Light and Color.—Edridge-Green attempts to show how his theory of light and color perception explains known facts of light and color vision. He assumes that light falling on the eye liberates the visual purple from the rods and a photograph is formed. The decomposition of the visual purple by light chemically stimulates the ends of the cones and a visual impulse is set up which is conveyed through the optic nerve fibers to the brain. These visual impulses probably differ in character according to the wave length of the light causing them. The author has examined the retina of several monkeys after they have been kept in a dark room and found that the visual purple was in the yellow spot between the cones. He discusses the evolution of the color sense, color blindness, color mixing, color vision of the periphery and of the retina, and color contrast.

The Lancet, London.

July 22.

7 Hemomanometry in Man. G. Oliver.
8 Neuroses of Early Life. H. Ashby.
9 *Influence of Feeding on the Mortality of Infants. W. J. Howarth.
10 Three Cases of Separation of the Descending Process of the Upper Tibial Epiphysis in Adolescents. G. H. Makins.
11 *Practical Value of Grocco's Paravertebral Triangle as a Physical Sign for the Diagnosis and Estimation of Pleural Effusions. W. Ewart.
12 Chondrodystrophia Fetalis or Achondroplasia. H. M. Joseph.
13 *Digestive and Other Actions of Certain Fruits. J. G. Sharp.
14 *Oral Sepsis as a Cause of Iritis. E. K. Campbell.

9. Influence of Feeding on Infant Mortality.—Howarth has investigated this question in the case of 8,348 children, 63.3 per cent. of whom were breast fed, 19.5 per cent. hand fed and 17.3 per cent. breast fed at first and afterward hand fed, or partly breast fed and partly hand fed. The highest death rate (197.5) was observed among the hand fed children. It was nearly three times that recorded among breast-fed children (69.8), and twice that of children reared partly by hand and partly naturally (98.7). Among hand-fed children, diarrheal diseases and deaths from defective nutrition prevailed. Next in importance are chest ailments and then convulsions due to disorders of digestion. Among breast-fed children the most common causes of death are bronchitis, pneumonia and convulsions. Among children who were first breast fed and subsequently hand fed the death rate is not so high as among the purely hand fed, although the aggregate mortality is considerably higher than that of breast-fed children; in one or two diseases the mortality is lower. This result obviously points to the advantages which accrue to children who have natural food supplemented by artificial food rather than an entire supply of the latter. Children fed on condensed milk show a very high mortality, 255 deaths per 1,000 children. Next come the children reared on bread, rusks, arrowroot and other farinaceous foods, 252 per 1,000. The deductions made by Howarth are as follows: The use of sweetened condensed milk, either whole or skimmed, invariably should be discouraged and whole unsweetened condensed milk only should be permitted when one is satisfied that the milk is being used with a proper degree of dilution and with the necessary additions as in the case of modified cows' milk; also that since the death rate among children reared on patent foods is, on the average, higher than among those fed on diluted cows' milk, every attempt should be made to encourage parents to use this latter food and to educate them to an appreciation of the necessity for the additions to, and the dilution of, cows' milk to render it suitable for infant's food. The addition of patent foods to the dietary of very young infants is unnecessary, sometimes dangerous, and always expensive. Furthermore, it must not be forgotten that the risks to which hand-fed children are exposed are considerably minimized by mixed feeding and that, therefore, every mother who is unable fully to satisfy her infant should be encouraged to continue to feed her child and to supplement any deficiency by means of artificial food, and that only in case of absolute necessity should resort be had to artificial feeding alone.

11. Practical Value of Grocco's Paravertebral Triangle in Pleural Effusions.—Ewart recommends observance of this sign in cases in which the size of the pleural effusion is less than a fifth of that of the pleura. Whenever fluid collects within a free pleura, a paravertebral patch of partial dullness, triangular in outline, is obtainable in the other, the "dry," pleura. The crucial proof employed to test the genuineness of the trianguar dullness is its disappearance when the patient assumes the lateral decubitus on the side of the effusion, and its reappearance immediately he sits up or turns on to the sound side. This is at the same time a demonstration of the significance of the dullness, and is sufficient proof that its production is due to the influence of a mobile fluid. When, however, the pleura is overdistended, the mobility of the fluid is much reduced. The complete disappearance of Grocco's triangle does not then seem to occur, but the height of the triangle becomes much less with the change to the lateral posture. If there is no Grocco triangle of dullness there can be no free effusion in the chest. The extent of the effusion can also be determined by this sign; for, whereas the base of the triangle, corresponding in position to the twelfth rib and to the pleural sinus, varies only slightly with the bulk of different effusions, the length of the vertical side of the triangle varies exactly with the upper limit of the effusion.

13. Digestive and Other Actions of Fruits.—In this article Sharp shows that many common fruits contain ferments which play the part of papain and bromelin (ferment of pineapple), and that they can digest both egg and serum albumin to some limited extent. The fruits experimented with were strawberries, cherries, oranges, pears and apples. To obtain most benefit from the succulent fruits they should be eaten at the end of the chief meal. Stewed fruit, as a stimulant to the lethargic gut in constipation, should be eaten half an hour before breakfast. Oranges, if peeled and cut into thin slices and with castor sugar strewn over them, are highly efficacious as an aid to digestion. Grapes should only be eaten at the end of the chief meal of the day.

14. Oral Sepsis as a Cause of Iritis.—Campbell urges that the constitutional treatment of iritis should be directed to the removal of oral sepsis, for although about 50 per cent. of cases of iritis are undoubtedly due to syphilis, there is even here the possibility of a mixed infection. He has seen three cases of iritis in which there was an absolutely negative history of either syphilis or rheumatism in any shape or form, but in all three there was marked evidence of oral sepsis. The teeth were scaled, filled or extracted, suppurating pockets were purified and the mouth was rendered as pure as possible. This, combined with the use of mydriatics and tonics, cured all three patients rapidly.

Glasgow Medical Journal.

July.

15 *Secondary Operation for Complete Rupture of the Perineum. C. J. Cullingworth.
16 Enlargement of the Spleen and Liver in a Child, the Second Case in the Same Family: Splenic Anemia or Banti's Disease. J. L. Steven.
17 Movable Displacement of the Kidney. D. Newman.
18 Treatment of Endometritis. J. K. Kelly.

15. Secondary Perineorrhaphy.—Cullingworth describes a secondary operation for complete rupture of the perineum which he has employed for many years. The operation appears to be a modification of Lawson Tait's. Having made lateral traction with the fingers on each side of the anus so as to efface the appearance of a triangle, forming a single, tense, transverse white line, Cullingworth plunges one blade of a pair of angular scissors deeply into the tissues of the rectovaginal septum at the left extremity of this white line,

dividing the septum into two layers from one end of the white line to the other. From each extremity of this first incision a cut is made, running forward, and another running backward, the whole series of incisions representing the letter H. The forward incisions will mark the outer boundaries of the vaginal flap, and their length will determine the length of the new perineum. It will generally suffice for these incisions (which are carried along the line at the sides of the vulva where skin and mucous membrane meet, or, to be more exact, where the skin alters in character) to be made to terminate where scar tissue ends, i. e., where the original perineum ended. If this is difficult to recognize, it will usually be safe to let them terminate where the labia minora commence. The two backward cuts are much shorter. Their object is to facilitate (1) the exposure and (2) the union of the divided ends of the sphincter. The completion of the vaginal flap may be accomplished either with the scissors or with the knife, the left forefinger being on guard in the vagina. The line of reflection of the flap should be nearly horizontal, and should extend completely across from the anterior end of one lateral incision to the anterior end of the other. Lateral traction is now removed, when the triangular shape of the gap in the torn anterior wall of the rectum again becomes apparent. This gap will be represented in the flap which has been dissected up. Care must be taken not to carry the anterior border of the new perineum far forward. The first suture passed is the buried perineal suture. The perineal needle is introduced into the skin about one-sixth of an inch from the margin of the denuded surface at a point immediately below the angle of reflection of the vaginal flap. It is passed completely round from one side to the other in the substance of the rectovaginal septum just above the line of reflection of the flap, and the point is made to emerge on the right side at a spot corresponding to the aperture of entrance on the left side. The needle should not, during its course, make its appearance either in the rectum, in the vagina or in the wound. The suture should be a buried suture throughout. Its use is to brace up the whole perineum and to prevent spaces being left in the deeper part of the wound, where the raw surfaces are not in contact, and in which fluids can accumulate. In cases in which no such spaces seem likely to occur, the buried suture may be dispensed with. When the needle has been successfully passed the eye is threaded with a stout silkworm-gut suture and the needle is withdrawn, the suture being left in position but not tied. The rectal tear is now sutured from above downward, the sutures being introduced by means of a full-curved needle, held in a firm needle-holder, at the edge of the rectal mucous membrane on one side of the rent. The point of the needle is brought out on the denuded surface at a point distant about half an inch from the point of entrance, in order to insure the inclusion in the stitch of a sufficient amount of tissue. It is then carried across to enter at a corresponding point in the raw surface of the opposite side, and to emerge at the margin of the rectal mucous membrane at a point exactly opposite the original point of entrance. The needle being now removed, the suture is tied and the ends are dropped into the rectum before the next suture is introduced. Two, three or four other sutures, according to the requirements of the case, are then introduced in the same manner, care being taken that the ends of each suture, as it is tied, are dropped into the rectum and kept back out of the way. Cullingworth always uses catgut for the rectal sutures, so that it may not be necessary to disturb the parts for their removal. When all have been introduced and tied, and not before, the ends may be cut off at the anus. The vaginal side of the laceration is now closed by means of a series of interrupted sutures of silkworm gut, the ends of which are left long so that they can be loosely tied together and turned into the vagina, whence they can be easily withdrawn for removal. The remaining perineal sutures, stout silkworm gut, are introduced through the skin at the same distance from the edge as in the case of the buried suture, about one-sixth of an inch. These sutures are made to pass deeply, and they remain almost, but not completely, buried. They cross from one raw surface to the other at the deepest part of the wound, and emerge at a point on the skin of the opposite side exactly corresponding in position to the point of entrance. The number required varies; usually it is three or four. Cullingworth generally passes them in order from before backward, leaving them untied until all have been passed. The tying is done in reverse order, viz., the hindmost first. This hindmost stitch should bring together the ends of the anus. Immediately before the perineal stitches are tied the wound receives a final irrigation and cleansing. The closure of the perineal wound will have the effect of completing the folding on itself of the vaginal flap, and the edges of the flap should be united by interrupted silkworm-gut sutures, continuing forward, as it were, the row of perineal sutures, but not passing them so deeply. Now is the time to introduce any superficial sutures that may be required in order to bring the edges of the skin neatly together. Sometimes no such sutures are required; sometimes three or four. Cullingworth is in the habit of leaving the ends of the perineal sutures long and tying them loosely together in a bunch. The advantages of this are as follows: 1, It adds to the patient's comfort by avoiding the pricking of the skin by the ends of the sutures, which almost always happens when they are cut off short; 2, if any dressings are necessary they can be applied much more easily than when the sutures are cut short; 3, it greatly facilitates the removal of the sutures, for, when the time comes for this to be done, the sheaf is untied and each suture in turn is slightly pulled on by means of its long ends, so that the knot can be easily made visible and the suture divided. The less elaborate the dressing of the newly-repaired perineum the better. Two little strips of lint, three inches long by three-quarters of an inch wide, anointed with vaselin and laid parallel with each other on each side of the wound, are all that is required. When the thighs, now flexed on the abdomen, come to lie in their natural position, these two bits of lint will be found to have their unanointed surfaces in contact, the bunch of perineal sutures projecting between them. It is quite obvious that the less interference there is with the newly united parts the better. Vaginal douching should be ordered only when there is a purulent or offensive discharge. Otherwise the internal parts should be kept clean by means of wool sponges and warm water. This local cleansing and changing of dressings can be done with least disturbance of the patient by flexing the legs on the thighs and the thighs on the abdomen in such a way as to afford a full view of the wound. If the patient can not, by grasping each leg under the knee, hold the limbs sufficiently out of the way for the nurse's purpose, the nurse should have an assistant support the heels of the patient while the wound is being attended to. The catheter is usually required for the first two or three days. As soon as the patient is able to dispense with the catheter she should do so. The patient must remain in the recumbent posture absolutely for at least fourteen days. A full dose of castor oil is administered sixty hours after the operation. If it has not acted in four hours the dose should be repeated. The perineal stitches are removed on the eighth day.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, Neurology, Pediatrics, Obstetrics, Gynecology, Orthopedics, Pathology, Dermatology, Ophthalmology, Otology, Rhinology, Laryngology, Hygiene, and Other Topics of Interest to Students and Practitioners by Leading Members of the Medical Profession throughout the World. Edited by A. O. J. Kelly, A.M., M.D., with the collaboration of Drs. Wm. Osler, J. H. Musser, J. Stewart, J. B. Murphy, A. McPhedran, T. M. Rotch, J. G. Clark, J. J. Walsh, J. W. Ballantyne, J. Harold, E. Landolt, and R. Kretz. Vol. II. Fifteen series. Cloth. Pp. 310. Price, $2.00. Philadelphia: J. B. Lippincott Co. 1905.

PSYCHIC TREATMENT OF NERVOUS DISEASES. P. DuBois. Translated and edited by S. E. Jelliffe, M.D., Ph.D., and W. A. White, M.D. Cloth. Pp. 466. Price, $3.00 net. New York: Funk & Wagnalls Co. 1905.

SUPERSTITION IN MEDICINE. H. Magnus. Authorized translation from the German. Edited by J. L. Ballinger. Cloth. Pp. 205. Price, $1.00 net. New York: Funk & Wagnalls Co., 1905.

PHYSICAL DIAGNOSIS. R. C. Cabot, M.D. Third edition, revised and enlarged: 245 illustrations. Cloth. Pp. 577. Price, $3.00. New York: Wm. Wood & Co.

V 45
1905